Iron and Steel Engineer

J. F. KELLY, Editor

CONTENTS

Volume V. JANUARY, 1928 Number I.

EDITORIAL—By A. J. Standing 3

THE ROLLING MILL IN 1927—By Barton R. Shover 4

MIXED GASES—By H. C. Seibert 6

A REVIEW OF ELECTRIC IRON AND STEEL FURNACE PRACTICE FOR 1927 By W. E. Lewis 7

ILLUMINATION IN RELATION TO SAFETY—By D. W. Blakeslee 8

ACCIDENT EXPERIENCE IN THE IRON AND STEEL INDUSTRY:

Blast Furnaces, Bessemer Converters, Open Hearth Furnaces, Foundries, Bar Mills, Heavy Rolling Mills, Plate Mills, Puddling Mills, Sheet Mills, Rod Mills, Tube Mills, Fabricating Shops, Forge Shops, Wire Drawing, Electrical Departments, Mechanical Departments, Power Houses, Yards, Erection of Structural Steel, Coke Ovens and Miscellaneous 10

PROPER COMBUSTION FOR FURNACES —By W. P. Chandler, Jr. 16

ELECTRICAL DEVELOPMENTS IN 1927 —By W. H. Burr 17

THE AI&SEE AND SAFETY—By Walter Greenwood 18

DEVELOPMENTS DURING THE YEAR 1927:

Stokers, Steam Turbines, Steam Turbine Generators, Frequency Changers, Synchronous Condensers, Synchronous Converters, Electric Heat, Cable, Electric Welding, Centrifugal Compressors, Motor Control 20

COMPLETE LIST OF ROLLING MILL DRIVES PURCHASED DURING THE YEAR 1927 25

MAIN ROLL DRIVES IN THE UNITED STATES AND CANADA—300 HP. TO 9000 HP. (1498 Drives) 27

CLASSIFIED LIST OF ROLLING MILL DRIVES IN UNITED STATES AND CANADA: 41

Rail and Structural Mill Drives (73) 41

Plate Mill Drives (54) 42

Blooming Mill Drives (41) 42

Sheet and Tin Plate Drives (144) 43

Rod Mill Drives (59) 44

Piercing Mill Drives (35) 45

Tube Rolling Mill Drives (80) 45

Strip and Hoop Mill Drives (153) 46

Multi-Speed Drives (37) 47

Merchant Mill Drives (277) 48

Wire Mill Drives (27) 51

Aluminum, Brass, Copper, Non-Ferrous Mill Drives (178) 51

Reversing Mill Drives (53) 53

A. C. Speed Sets (139) 54

D. C. Adjustable Speed Drives (329) 55

Bar and Billet Mill Drives (163) 59

Cold Roll Drives (100) 60

Sheet Bar and Skelp Mill Drives (63) 61

INDEX OF AUTHORS PRESENTING PAPERS FOR THE AI&SEE AND IRON AND STEEL ENGINEER FROM 1907 TO 1927 63

INDEX OF PAPERS PRESENTED BEFORE AI&SEE AND IRON AND STEEL ENGINEER FROM 1907 TO 1927 70

CARNEGIE STEEL COMPANY SAFETY TROPHY FOR 1928 86

BETHLEHEM STEEL CORP. 1928 ACCIDENT PREVENTION CONTEST 87

HUMAN WASTE—PREVENT IT—By E. G. Grace 87

IRON AND STEEL EXPOSITION 88

ITEMS OF INTEREST 80

LIST OF ADVERTISERS 91

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(Continued on Page 90)

605 v.5

EDITORIALS

THE IRON AND STEEL ENGINEER

By A. J. STANDING*

I KNOW of no more vital message that I could bring to the membership of the Association of Iron and Steel Electrical Engineers at this time than to stress the very important part that our official publication, now known as the Iron and Steel Engineer, has played in our growth and development during the twenty years of our activity as an Engineering Society wholly within the Steel Industry.

Through the files of our publications covering the past two decades of Steel Mill electrification there is available the only authentic record of the march of progress toward the goal of maximum economic electrification of this great basic industry. During this same period there has taken place a greater advancement in the art of steel making than has characterized any other period of its history and

A. J. STANDING

we feel that the A. I. & S. E. E., through its membership, has played no small part in the realization of increased tonnages and greater economies combined with safer operation.

Our monthly publication has grown in value largely through its use by our Active Members as a medium of expression of their accomplishments and results along Steel Mill engineering lines as well as its use as a source of information touching on problems that may arise in their particular plants but which have been solved satisfactorily in some other plant and the solution accurately preserved as a permanent record the importance of which is recognized throughout the Engineering Profession.

The most treasured literary productions are of little value to those who will not read them and make use of the knowledge they contain, therefore let me again stress the thought that it is only through the use of our publication that its greatest value may be realized.

Another, perhaps more materialistic result of the general use of our magazine throughout the Steel Industry, is its increasing value as an advertising medium, a feature which not only attracts the highest class of advertising of equipment and materials pertinent to the manufacture of Steel, but which also yields a revenue which makes our publication self sustaining.

Realizing that the wealth of information in our files must be readily accessible we have taken great care in the preparation of our twenty year index of technical papers as well as a complete and extremely accurate tabulation of the major electrical mill drive installations throughout the entire Country. In this service we have always enjoyed the maximum possible co-operation of the Electrical Manufacturers.

In the preparation of the reports of our various Committees dealing with the latest electrical developments we have likewise enjoyed the confidence and encouragement of all manufacturers of equipment of interest to the personnel of the Steel Plants.

We intend to cover the fields of our two main allied Sections, namely: Combustion and Safety, with the same care and thoroughness that have characterized our efforts in the field of applied electricity. By virtue of our unique position within the Steel Industry we are able to keep in touch with the latest practices in Combustion, electrical heating, application of anti-friction bearings, and similar developments as they occur in the Industry we represent.

It has always been the policy of the A. I. & S. E. E. to serve the Steel Industry and to confine our attention to the problems arising within or directly affecting this Industry. That this policy is sound we have no reason to doubt as we feel that our adherence to this, our initial plan, has met with the continued favor of the leaders of the Steel Industry.

The thought has been crystalizing in the minds of some of us that we as an Association should take more of a part in the training of those younger members of the various Steel Mill organizations who will be the Department Superintendents of the next decade. With this thought in mind we have decided to start, as rapidly as we can arrange our material, on a definite program of instructive information covering the apparatus handled by the men of our various departments in the hope that we can give them something that will spur them on to a desire to advance in knowledge which will gradually fit them to assume increasing responsibilities. Our plan is to start this work through the medium of our monthly publication and eventually to compile the data on various subjects into useful pamphlets which will be available to all who are interested. We realize we will have to feel our way at first but we believe that our decision to make this attempt is sound and that we will have the support of all men-

*President, Association Iron & Steel Electrical Engineers.

bers of the Association who may be called upon to contribute to this program. We want you to think this plan over carefully weighing the possibilities against the probable labor involved and we feel confident that you will come to the conclusion that we are about to enter a field that has unlimited scope and may be made the source of profitable returns to the Steel Industry of the next decade.

The successful growth of our Association has been the natural result of the realization of the men in the Steel Industry that the time is ripe for broader exchange of ideas pertaining to the newer problems of modern steel making and the scope of our publication has not only kept pace with this growth, but we have tried by the proper selection of material to anticipate as much as possible the trend of engineering methods and practice so that the operating engineer would be able to find at least some light on the problems about to confront him for actual solution.

We can continually increase the value of The Iron and Steel Engineer if you members will give us your help and your written experiences. Many of our members have met and solved problems of interest to all of us but there is often times a sort of mental inertia to be overcome before the article can be produced and this is what we want you to overcome. We have met with the censorship plea, and we realize that it is in some cases justified, but we believe that in the majority of instances fairly written technical descriptions and discussions of problems can be so handled as to be available for publication.

In closing I want to urge that you continue to give your support in an increasing measure to all the work of our Association and especially to our one official publication, The Iron and Steel Engineer, because by continually raising the standards of our work we will draw into our membership those men in the Steel and allied industries who, since they are seeking information and advancement, are the type of men we are glad to welcome as members. Such men, by their interest and ambition, will continue to strengthen our position through their work in our various Sections and finally as Directors and Officers of our Association will be able to fill their positions with credit to themselves and to the Industry they serve.

The Rolling Mill in 1927

By BARTON R. SHOVER*

THE year 1927 witnessed more improvements in the rolling mill than in any other branch of the steel industry. Lack of demand during the last two or three years resulted in no material increase in steel making capacity, but did stimulate efforts towards reducing the cost of rolling and finishing by changes in methods, faster rolling, cheaper power and the substitution of mechanical apparatus for manual labor.

Probably the most notable achievement was the successful mechanical rolling of sheets. Early in 1923 ingots were rolled into plates, which were sheared into the proper lengths and each piece passed independently through a series of standard sheet mill roll stands, producing individual 16 gauge sheets direct from the ingot. Lighter gauges were produced by matching this product and finishing the packs on a second similar mill. Time, study and patience were required to overcome the many difficulties, but the past year fully demonstrated the success of this mill, which is now mechanically rolling sheets up to and including 48" in width.

On November 25, 1926, the first piece was rolled on an entirely different type of mill designed for the mechanical production of sheets, but it was not until the middle of 1927 that the success of this mill was assured, and during the second half of that year three more similar mills were put into operation.

The principle of these mills is the production of what might be called either "wide strip" or "long sheets," which product is finally sheared into sheets of the required length. The roughing mill of the initial installation consisted of a universal plate mill, while the other three have interrupted continuous roughers. The finishing mills of all four consist of a train of individually motor driven four-high stands operated as a continuous mill, with adjustable delivery speeds of from 500 to 1,000 feet per minute, the product being either coiled or allowed to cool flat, according to further operations.

The original mill was designed primarilly for the production of full finish sheets, the coils being continuously pickled, broken down to the desired thickness on tandem cold mills, continuously annealed, and finish on a cold mill. Two of the other installations, in addition to the production of full finished material, are intended to shear up the product of the hot mill to make "breakdowns" for standard sheet mills, while the product of the third is sheared into the desired lengths, matched and doubled, reheated and finally finished into tin-plate, the first real departure from established practice in the manufacture of that article.

The four-high mill is not new, having been patented about 1876, and the largest plate mill in the world, which has been in service for the past ten years, is built on this principle. In 1925 a four-high mill equipped with roller bearings on the backing up rolls, was used for rolling copper and brass, but it remained for the projectures of the originals "Stripsheet" mill to recognize that this type would best meet their requirements, and at least as much credit is due their optomism, hard work and careful study as there is to the apparatus itself.

Up to the present time the companies owning these mills have been extremely reticent in regard to operating details, but from available information it appears that no more difficulties have been encountered than has been the case with many other

*Consulting Engineer, Pittsburgh, Pa.

rolling mill innovations. The product, particularly of late, has given general satisfaction, and some purchasers are even specifying mechanically rolled sheets because of their uniformity of gauge and other qualifications.

Theoretically, continuous hot mills can commercially roll only comparatively large orders of No. 16 gauge and heavier, and produce full finished material from these gauges on cold mills. Experiments have been made and considerable study expended with the view of hot rolling the lighter gauges, which as yet must be produced on the standard mill, but no attempt to do so commercially is probable until after the existing continuous mills shall have reached estimated production and costs.

In an endeavor to lower the production costs of standard sheet mills, experiments are now being conducted by several of the smaller mills, both as regards methods of operation and new equipment, and while the results of these trials have not been announced, considerable progress is known to have been made. Even should some or all of these experiments prove successful, it appears that, so far as large tonnages are concerned, 1927 has witnessed the "beginning of the end" of the last exclusively manually operated rolling mills, and that the sheet mill as now known will follow in the wake of the former hand operated billet, sheet bar, rod and merchant mills.

A 10" four-high continuous strip mill started last year, has already delivered its product at the rate of 2,700 feet per minute, and this high delivery speed was equalled that year by a merchant mill started the previous year. The fastest rod mill in the world was also started in 1927, as were also two four-high light plate mills which are expected to do rapid work.

The two largest structural shape mills for rolling both standard and special sections, were started in 1927. These mills are operated entirely by electricity, and to state it briefly, are the "last word" in rolling mill design.

One existing reversing blooming mill was replaced and three new ones started. The replaced mill is operated by the old engine, but is designed for future motor drive, while the three new mills are all electrically driven. The year also witnessed the starting of one new sheet and tin bar mill and the largest skelp mill built up to date.

One more Pilger mill for swedging large diameter seamless tubing was put in operation. The main equipment of this installation was imported from Germany, but the electrical outfit, heating furnaces and most of the other auxiliary equipment are strictly American and constitute a great improvement, particularly as regards labor saving, over the standard German practice.

The use of roller bearings on motors and auxiliary apparatus in steel works is by no means new, and the last year showed a still more decided drift in that direction, but the most important thing in connection with this bearing was the success attained from its application to roll necks. Experiments made on a four-high copper mill and a 16" merchant mill during previous years led to the adaption of roller bearings on the backing up rolls of both the hot and cold mills used in the new type wide strip mill, also for a number of standard hot mills, and while some trouble has been experienced, the results in general have demonstrated their reliability and anti-friction qualities. They have not been in use long enough to determine their life because as yet any wear that has shown up is negligable.

Their ruggedness and ability to withstand excessive strains is proved by the fact that several backing up rolls on four-high mills have been broken with absolutely no damage to the bearings and the following test on the finishing stand of a merchant mill shows the saving power:

	Friction	Loads Rolling	Total Working
Standard Bearings	95 HP	75 HP	170 HP
Roller Bearings	20 HP	75 HP	95 HP

Because the actual net work is the same in both cases, power requirements are directly comparable, the saving in working load being 44% and in friction 78.9%. If the customary mill load factor of 80% is assumed, the average saving of power required to drive the stand would be 48.4%.

Roller bearings probably contributed as much as any other one single item to the success of the wide strip mill, not only because of the saving in power and consequent less size and weight of the operating parts of the mills, but also, once the rolls are correctly aligned there is no wear of bearings or necks to add to the operators difficulties.

To illustrate the advance which has been made in the application of roller bearings to roll and pinion necks, during the first eleven months, one manufacturer entered orders for a total of 368 such bearings. The list includes bearings for rolls and pinions of a blooming mill, one set for necks 20¼" in diameter and one set to withstand a neck pressure of 1,600,000 pounds.

Electric drive has been of great assistance to the application of roller bearings, because of the ease in determining savings in power consumption. This saving will enable the roller bearing to reciprocate because lower power requirements mean smaller and less costly drives and it is safe to predict that, in the not distant future roller bearings on rolls and pinions will be as standard practice as electric drive is today, and 1927 witnessed the start of this change.

The past year seems to have brought about a closer relation between the Power and the Steel Companies. Steel Companies are more generally recognizing the fact that it does not pay to generate electric power beyond what they can produce from otherwise waste heat, that this waste heat gives them excess power over the week end, and that the Power Companies really have something valuable to offer. On the other hand, the Power Companies have become more conversant with steel problems, have recognized the possible advantage of interconnection with the Steel Companies, and in some cases, have changed or even eliminated requirements to which the Steel Companies made valid objections. One contract entered into during the previous year between a large Steel Company and a Power Company proved to be much more advantageous to both than had been considered pos-

sible, and resulted in over 40% increase in the consumption of power purchased by the Steel Company. At least one contract for purchased power was signed by one of the large independents, and several negotiations for interchange were started, so that indications point toward the Steel Companies becoming purchasers of larger amounts of power.

Not only were all new mills equipped with electric drives, but quite a number of steam engines were replaced, the three larger manufacturers of electrical equipment reporting the following sales of motors for driving rolling mills:

	Alternating Current	Direct Current	Total
Number	43	52	96
Capacity	66,525 HP	93,825 HP	160,350 HP

These motors were applied as follows:

ALTERNATING CURRENT

	Hot Hills	Cold Mills
Number	39	4
Capacity	65,075 HP	1,450 HP

Twelve of the thirty-nine motors, aggregating 30,850 HP were synchronous, the greatest capacity of this type sold in any one year.

DIRECT CURRENT

	Hot Hills	Cold Mills
Number	36	16
Capacity	85,325 HP	8,500 HP

Eight of the thirty-six motors with a combined capacity of 39,250 HP were for driving reversing mills.

The percentage of D.C. motors was much higher than in any previous year and was apparently due to the number of reversing motors and to the increased use of individually motor driven stands in continuous mills, where accurante and simple speed adjustment is required. First cost also was a factor, because below 500 HP, and in some cases even larger, the complete outfit of motors and motor-generators is less expensixe than for adjustable speed A. C. drive.

At the beginning of last year more rolling mills in this country were driven by motors than by steam engines. So far as could be learned, not even one steam engine was added for this purpose, therefore the figures previously given showing the increase in motor drive indicates the approach of the steel mill electrical engineer's Utopia when the last engine shall have been converted into steel and rolled into merchantable product by its successful competitor, the electric motor.

Mixed Gases

By H. C. SIEBERT*

IN a paper which I read before this Association four years ago it was pointed out that economical use of the by-product and waste fuels presented a field which holds great reward in economy and efficiency in the operation of a modern steel plant. Today I do not hesitate to make this point stronger by stating that the profit which lies in these fuels is such that a surplus may be shown in the financial balance of a plant which may be operating under a deficit. Today but few of the old merchant blast furnaces which are so numerous in our state are in operation because they cannot meet the competition of the blast furnaces which operate in conjunction with steel plants and mills. A factor of primary influence here is that embodied in by-product fuels. The old merchant blast furnaces operated under the handicap of a high coke rate which included waste in use of the furnace gas. In the modern steel plant this gas is being harnessed more and more and is being diverted so as to eliminate the more expensive fuels, as producer gas, fuel oil, etc., in metallurgical furnaces. To give you an idea of the importance of the fuel item in the total cost of a modern plant making structural steel for example, it can be stated that this item represents 30 to 35 per cent of the total cost of manufacture. It is only exceeded by another item of cost which is greater, namely labor, which equals 40 to 45 per cent. These two items thus account for about 80 per cent of the total manufacturing cost. As steel plant engineers all of you are familiar with the fact that our modern plants are so perfected in mechanical equipment that the minimum of labor is now required for their operation. It therefore seems that we have about reached the limit in mechanical or electrical devices and general equipment and the field therefore offers but slight opportunity for improvement. This, at preasent, is not case case in the fuel item. This field is just being plowed over for the first time and the soil shows a rich character from which great harvests may be reaped. In all localities, however, this soil is not of uniform richness, hence the same character of fruit cannot be grown. By this I mean that the soil is richer in the plant which has coke oven gas available than in the plant which has at its disposal blast furnace gas alone. It is clear that these two gases will yield a temperature of combustion, the intensity of which depends primarily upon the relative percentage of the low heat value gas contained in the mixture, and secondarily upon the extent to which the gases and air participating in the combustion are preheated before their entry into the furnace. Thus, for the furnaces requiring high temperatures we must have richer mixtures and higher preheats than in those requiring lower temperatures.

As contributory factors in the scheme there should be mentioned three "tions," namely, insulation, recuperation, regeneration. Each of these three is important and necessary to efficiency and economy in operation. By means of the first, we can reduce

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the loss of heat by radiation which is an important factor in the heat balance of every metallurgical furnace. By means of the second and third factors named, we can increase the temperature of combustion to the degree needed and save fuel, because either of the two can be accomplished by means of heat which would otherwise be wasted from the furnaces. Considerable work has been done lately in each of these three items and more work is being considered for the future. I would refer in particular to the work which is being done in the development of better recuperators and regenerators. In this connection it might be pointed out that there seems to be the tendency to substitute heat resisting metals for fire brick for such heat interchange. Development along this line should be encouraged as metal has the advantage in the rate of heat conductivity and will also make it possible to simplify the construction as compared with that required by brick recuperators or regenerators. Finally, I would not limit the factor of regeneration to the point of heat conductivity alone, but consider it in the broader sense. By this I mean that many of our present furnaces must be regenerated into a better form of construction. The old traditions must give way to scientific investigation and progress. In this connection it should be pointed out that automatic control must be substituted for human control. This change is just as essential in the work of combustion as it is in that of mechanical and electrical equipment.

The field in combustion can thus be regenerated into a new form which can and will be the means from which our modern steel plants can derive a revenue worth while.

A Brief Review of Electric Iron and Steel Furnace Practice During 1927

By W. E. LEWIS*

DURING the past year about thirty new commercial size iron and steel melting furnaces were added to this countries capacity. The largest of these were two twenty-five ton furnaces. A ten ton furnace arranged for special roof charging was also placed in operation. Order was placed for another ten ton furnace for installation during 1928. Several smelting type furnaces were also sold during 1927, as well as a number of large size melting furnaces. The past year also marked a new peak in the export furnace business. Ten American furnaces being sold principally on the continent and in South America.

From the engineering standpoint a number of interesting developments served to mark the trend in electric melting practice. Perhaps the most noticeable tendency has been the higher powering of a number of equipments, especially those for steel castings and small billet size ingots for rolling direct with the blooming mill break down to billet size.

A number of older single voltage installations have also been revamped with larger capacity substations furnishing power at the arcs at higher voltages and with marked improvement in their outputs and operating costs. Single voltage operations, that is, employing the same voltage for both melting down and refining have been practically discontinued. The present practice being to employ a relatively high melting voltage which is reduced by means of suitable tap switching or other changes as soon as the bath becomes molten. In this way production is speeded up, power consumption per ton is reduced, electrode consumption per ton is reduced and long refractory life is obtained.

On some special installations four voltages are made available at the switchboard but ordinary foundry and steel mill work is carried out using two voltages, each of which is, of course, adjustable through a wide range and arranged so that variable reactance may be employed to give the proper cushioning effect suitable to the stage and type of work.

While pre-heating seems to be losing favor almost entirely, a number of new designs in top charging have been used. One consists of removing the shell from under the roof and electrodes for charging; another design in use in a large eastern steel works with a six ton per hour furnace raises the roof and superstructure about a foot and swings them to one side so that the furnace may be quickly charged with a special charging bucket.

Hand charging is but little used except with the smaller furnaces, while most of the larger furnaces use charging chutes. Ordinarily about ten to fifteen minutes elapses between the time power is shut off and the heat is tapped until the furnace is recharged and power again applied. Usually two of these chutes are employed, the furnace being tilted toward the pouring pit and the charging chute is raised until its charge of steel scrap, foundry returns and turnings slides forward onto the hearth.

Most of the new commercial size iron and steel melting furnaces are operated with acid linings. A number of new basic lined furnaces were, however, installed during 1927 and several of the export furnaces are using basic linings for the production of small ingots. Most of the furnaces going to the continent, i. e., to such countries as Spain, Sweden, etc., are operated basic while in South America, large quantities of steel scrap quite low in phosphorus and sulphur is available so that the furnaces in Mexico, Brazil, Chile, etc., are operated with acid linings.

Several new installations were made during 1927 either for gray iron exclusively or for making both cast iron or steel castings. Electric iron is usually

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made from charges of cast iron scrap, borings and foundry returns, although in the western part of the country gray iron is quite commonly made from steel scrap charges by making suitable additions of carbon and ferro-silicon. Electric furnace iron is of very fine grade, strong and close grained. The metal is held to very close analysis, is tapped at the exact temperature best for the grade of metal to be poured and receives the benefit of superheating.

One new interesting gray iron installation is being used for the production of the cast iron parts of electric ranges; these parts, of course, being suitably enameled. This furnace is operated acid lined, the charges being in the neighborhood of five to six tons. Each heat taking about two hours' time.

In the malleable field, three new furnaces were ordered during 1927. The largest of these was a three ton per hour furnace. The smallest was a 1000 pound furnace. The other was a three ton operating charge size for duplexing cupola malleable; this furnace being the first of a battery to be installed in a large foundry for this purpose and its installation resulting from the very satisfactory performance of two larger duplex furnaces in a large Michigan automotive foundry.

The Laboratory type furnaces are of two sizes, one a fifty pound furnace and the other a 250 pound usual operating charge furnace. The fifty pound ladle type is used most by technical schools and research laboratories. The 250 pound furnaces are used by specialty manufacturers for the melting of various alloys and by the research departments of various large steel works and foundries.

These small furnaces operate with two electrodes, i. e., they are single phase furnaces having two arcs in series. These equipments are arranged to operate with either direct, indirect or submerged arcs. Were the charges of high electrical resistivity so that it would be difficult to maintain arcs, it is customary to operate with the electrodes inclined and the arc drawn between the two electrode tips at least until the metal has been brought to such temperature that it will carry the current more readily so that the electrodes may be brought to a vertical position and the current passed through the charge with both electrodes arcing directly to the metal. Some other work, fusing refractory substances, smelting various ores and work of similar nature is conducted with submerged arcs, that is, the electrodes are buried in the material being fused. This type of operation with the Laboratory furnaces is very much along the same style of work as is conducted for the making of ferro-alloys and calcium carbide but these operations, are of course, on a much larger scale and three phase furnaces are used. Several large furnaces of this nature were sold during 1927 for special work.

During 1927 a number of new furnaces were installed in various steel castings plants throughout the country to replace converters. It is now generally known that electric steel castings can, under ordinary conditions, be made at considerably lower costs than converter steel castings. Electric steel castings are so much more desired than converter castings because of their superior properties together with the fact that it can be produced much cheaper than converter castings and has resulted in the use of converters being discontinued in quite a number of shops.

The foregoing discussion serves to outline the tendencies and developments in the electric arc furnace iron and steel melting field during the past year and in a measure forecasts developments during 1928. The electric furnace industry will undoubtedly continue its steady growth during the coming year in which several large electric furnaces will most likely be installed and a number of new smelting type furnaces will be put in operation as well as an increasing number of standard three phase, direct arc furnaces for melting and refining irons and steels.

Illumination in Relation to Safety

By D. W. BLAKESLEE*

ARTIFICIAL illumination is used in many industries primarily to make work places safe. This is true of the Iron and Steel Industry, which industry was the father of the Safety First movement. In the steel mills, the subject of Light and Safety was at its point of maximum interest about fifteen years ago. For some reason, since that time, the general interest in the subject has been decreasing. The reason probably is that just prior to about that time the change in electrical illumination was being made from carbon arc lamps to incandescent electric lights in steel mill illumination. It may be that the policy of economy as followed in some industries is the thing which has prevented the increase of intensity of illumination in the class of industries referred to, to the point where it should be today.

Our State Codes prescribe minimum foot-candles of illumination for various industrial applications in an effort to reduce the great annual loss of 108,000 man years due to defective lighting installations. These State Codes were based upon the standards developed by the Illuminating Engineering Society to improve illumination of all applications by specifying their foot-candle intensities. In 1921 the American Engineering Standard Committee, from 13 national organizations, approved the "American Standard" code of lighting factories, mills and other work places. Although the industries referred to are trying to conform to the lighting codes to prevent accident, they should be as interested in the use of more illumination than required by the code, so that their stockholders may realize greater returns that can be obtained from the dollar and cents in engineered lighting systems. It has been shown that an average of 15% in average shop production may

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be obtained by an increase of two to eleven foot-candles of illumination. Of course by obtaining the maximum financial returns through adequate illumination, the accident hazard due to poor lighting is reduced to a minimum. There is no danger of too much illumination from the safety point of view, nor from any other viewpoint. Although our eyes could use it, our electric lights for obvious reasons will never produce the general illumination of the foot-candles received from the sun. We can now use 16 times the illumination we had in 1912 without any increase in cost. If we were using two foot-candles then, we should now be using 30 foot-candles of illumination. It is to be hoped that no economical manager will imagine that he can save 15/16th of his lighting cost by keeping the same level of illumination he had in 1912. If he has any such idea, he should compare that cost with 15% of the value of the production of his shop, which might be obtained in addition if modern intensities were used.

The iron and steel industries' applications of electrical illumination are so diversified that almost the whole range of general illumination intensities may be employed. As stated above, the primary object of lighting in this industry is that of safety and therefore the intensity of illumination in most applications is relatively low.

As average prevailing conditions are very much below the recommended levels of illumination which follow, these will seem high to many steel mill officials. The following are the recommended levels of illumination:

2 to 4 Foot-Candles: Rough stock rooms, rough castings, cleaning, rough clay and chemical processes, coal and ash handling, aisles, passage ways, door ways, etc., locker and wash rooms, etc.

6 to 8 Foot-Candles: Soaking pits, pre-heating furnaces, rough wood work, steel fabrications, steel castings, and heavy rolling, plating, grinding or rolling mills, rough bench and machine work, rough assembly, rough moulding and core making, engine, transformer and switchboard room, rough inspection, shipping and receiving.

10 to 20 Foot-Candles: Fine wood working, fine stock rooms, automatic steel manufacturing machines, sheet metal work, polishing, burnishing, painting, fine packing, fine bench and machine work, automatic machines, light and medium inspecting, fine molding and core making, fine forging and welding, fine assembly, offices.

20 to 50 Foot-Candles: Fine inspecting and sorting, extra fine paint finishes, extra fine bench-machine work, extra fine assembly, drafting room.

In the iron and steel industry, the typical area to be illuminated is within what may be termed a high bay structure. This is usually a room in which travelling cranes or other factors make necessary the location of lighting equipment to heights of 30 feet or more from the floor. In applications of this classification, a more specialized treatment is required to produce the most desirable results, than the ordinary location of RLM reflectors on the centers of squares. The usual presence of travelling cranes in the typical steel mill building usually necessitates the location of the lighting equipment near the roof or at the best, just below the bottom member of the roof trusses. Since the steel mill structure is usually of great height in comparison with its width, the use of reflectors which direct a great portion of their light in the higher angle, must result in a relatively low overall efficiency of the system. This condition is further aggravated in the industry referred to by the fact that the walls of the building are almost invariably so dark as to eliminate any possibility of light being reflected by them. It is evident, therefore, that the requirements here would best be met by a unit which directs and confines the light of the lamp within a small angle as measured from the vertical axis of the unit. In this way the light is delivered to the area where it is required for safety with the least possible intervening losses.

In the iron and steel industry, the smoke and dust present in the building make frequent cleaning of the lamps and reflectors a necessity in order that conditions of safety may prevail. To facilitate such frequent cleanings of units located at such a height some type of cut-out disconnecting hanger should be used so that the lighting equipment may be lowered to the floor and disconnected from the electrical circuit in one operation. The use of the cut-out disconnecting hanger reduces the hazard of cleaning lighting equipment to a minimum for two reasons: the danger of the electrical shock is eliminated; the maintenance man does not have to climb out on traveling cranes or in the structural steel of the building. The use of the cut-out hangers enables the cleaner to do a better and more lasting job. Referring again to the reflector; the mirrored glass reflector when thoroughly cleaned returns to its initial coefficient of reflection.

That the illumination equipment may produce its maximum condition of safety, there should in addition to the reflecting qualities of the reflector, be considered the effects of heat. A mirrored glass reflector may be obtained which carries a written guarantee that its silvered backing will not discolor, crack nor peel for a period of ten years.

In the large industries, there are now provided for the work people, many facilities such as kitchens, dining-rooms, locker rooms, shower baths, etc. These places should be well illuminated for the sake of safety, not so much due to the hazard of physical injury, but to reduce the possibility of contamination by transmissible and contagious disease. In the iron and steel industry it is unavoidable that the clothes and bodies of the workmen became very dirty. Where the employees are provided with shower baths, they, as well as the locker rooms, should be adequately illuminated for the sake of hygiene.

Exterior lighting of steel plants is of no little importance. The use of enameled steel reflectors is particularly suited for the lighting of small areas. The spacing of such units outdoors should in general not exceed three times their mounting height. It is consequently necessary to have a number of poles or favorable building locations in order to use this form of lighting. Since maintenance is a serious problem in steel plants, the equipment used should be as nearly dust tight and weather proof as possible. Air tight floodlights are now being employed for the illumination of large outdoor areas such as found in steel mill works. These floodlights may be used to project the light within a certain comparatively narrow angle which is characterized by high beam candle power and which is there-

fore most applicable to the lighting of large areas such as classification, storage and railroad shipping yards. Smaller flood-lights are being used, having very wide distribution of light and which are applicable to relatively smaller areas in which outdoor work of various natures is performed in the iron and steel works.

There are certain special applications within the steel mill building where a flood-light may be advantageously employed. As an example, the fastest rolling mill in the world, located in the Aliquippa Works of the Jones & Laughlin Steel Corporation at Woodlawn, Pa., which mill has the world's record for tonnage production, supplements its general illumination by two flood-lights of the larger classification, having the narrower beam projection, so located as to illuminate the upper and lower side of the mill stands and rolls. Such illumination is not necessarily required while the mill is rolling steel but is very desirable when the mill is down for repairs because of the fact that the mill crane is usually working over the mill, thus throwing shadows upon it and because the men are working at top speed to reduce the delay as much as possible and thereby increasing the accident hazard to a maximum.

Accident Experience in the Iron and Steel Industry

IN the following tabulated tables you will find the accidents and accident rates in the Iron and Steel Industry, representing a period of twenty years, by departments and by years and five year periods. The frequency rate and the severity rate were compiled in accordance with the rules of the International Association of Accident Boards and Commissions. The tables were taken from the Bureau of Labor Statistics, from the United States Department of Labor.

Frequency Rate—This is the number of tabulatable injuries per million man-hours worked. It varies from 5.0 or less in exceptionally safe industries and well-managed plants to 100 or more under unsafe conditions. In large establishments or groups it is also customary to compute separate frequency rates for fatalities, permanent disability injuries and temporary disability injuries. The definition of permanent disability is that given in the compensation statute of the state in which the plant is located.

Fatality frequency rates are frequently expressed as deaths per thousand employed. When so expressed, it should be clearly stated whether the base is derived from man-hours or is the number of names on payroll.

Severity Rate—This is the total number of working days lost as the result of tabulatable injuries per 1,000 man-hours worked. The number of working days lost in the case of temporary disability injuries is the actual, and includes the day of injury occurrence. Days actually lost on account of permanent disability and fatal injuries, however, are not included and weighting is used instead. These weights, shown in Table I, were derived by the committee of the International Association of Industrial Accident Boards and Commissions and represent, not average disability from work on account of the injury, but the estimated loss of economic usefulness expressed in terms of working days.

In applying these weights, injuries not involving amputation should be assigned a proportion of the weight stipulated for the entire loss of the member in accordance with the degree of impairment. The weighting for impairment of function of any member should be such percentage of the weighting for dismemberment as may be determined by the adjudicating authority in fixing the compensation for such impairment, i. e., if loss of an arm is compensated by 240 weeks' indemnity, then an impairment of the arm for which 160 weeks' compensation was paid should rate as two-thirds of the loss of the arm in the above scale. Hernia should be included only as a temporary disability on the basis of the actual time lost.

TABLE I—Table of Time Losses for Weighting Industrial Accident Disabilities to Show Severity.

NATURE OF INJURY	Degree of Disability in % of Permanent Total Disability	Weights in Days
Death	100	6,000
Permanent total disability	100	6,000
Arm above elbow, dismemberment	75	4,500
Arm at or below elbow, dismemberment	60	3,600
Hand, dismemberment	50	3,000
Thumb, any permanent disability of	10	600
Any one finger, any permanent disability of	5	300
Two fingers, any permanent disability of	12½	750
Three fingers, any permanent disability of	20	1,200
Four fingers, any permanent disability of	30	1,800
Thumb and one finger, any permanent disability of	20	1,200
Thumb and two fingers, any permanent disability of	25	1,500
Thumb and three fingers, any permanent disability of	33 1/3	2,000
Thumb and four fingers, any permanent disability of	40	2,400
Leg above knee, dismemberment	75	4,500
Leg at or below knee, dismemberment	50	3 000
Foot, dismemberment	40	2,400
Great toe, or any two or more toes, any permanent disability of	5	300
One toe, other than great toe, any permanent disability of	0	0
One eye, loss of sight	30	1,800
Both eyes, loss of sight	100	6,000
One ear, loss of hearing	10	600
Both ears, loss of hearing	50	3,000

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS

The industry

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1907	27,632	61	106	6,530	6,697	0.7	1.3	78.8	80.8	4.4	1.7	1.1	7.2
1910	202,157	327	848	44,108	45,283	.5	1.4	72.7	74.7	3.2	1.2	.8	5.2
1911	231,544	204	931	34,676	35,811	.3	1.3	49.9	51.5	1.8	1.1	.6	3.5
1912	300,992	348	1,241	54,575	56,164	.4	1.4	60.4	62.2	2.3	1.1	.8	4.2
1913	319,919	426	1,200	55,556	57,182	.4	1.3	57.9	59.6	2.7	.9	.7	4.3
1914	256,299	219	860	37,390	38,469	.3	1.1	48.6	50.0	1.7	.9	.6	3.2
1915	116,224	87	372	13,481	13,940	.2	1.1	38.7	40.0	1.5	.7	.5	2.7
1916	166,646	159	728	20,655	21,542	.3	1.4	41.3	43.0	1.9	1.0	.6	3.5
1917	410,852	523	1,268	57,094	58,885	.4	1.0	46.3	47.7	2.5	.9	.6	4.0
1918	474,435	543	1,253	54,293	56,089	.4	.9	38.1	39.4	2.3	.8	.5	3.6
1919	377,549	419	848	41,009	42,276	.4	1.0	40.2	41.6	2.2	.8	.6	3.6
1920	442,685	327	1,084	49,482	50,893	.2	.8	37.3	38.3	1.5	.8	.4	2.7
1921	237,094	156	527	21,279	21,962	.2	.7	29.9	30.8	1.3	.7	.5	2.5
1922	335,909	236	878	32,120	33,234	.2	.9	31.9	33.0	1.4	.8	.5	2.7
1923	434,693	314	1,188	41,766	43,268	.2	.9	32.1	33.2	1.4	.8	.5	2.7
1924	389,438	312	1,133	34,481	35,920	.3	1.0	29.5	30.8	1.6	.9	.5	3.0
1925	445,223	207	1,091	36,404	37,772	.2	.8	27.3	28.3	1.2	.8	.4	2.5
1926	436,692	322	1,202	31,667	33,230	.2	.9	24.2	25.3	1.7	.8	.4	2.9
1910–1914	1,310,911	1,524	5,080	226,305	232,954	.4	1.3	57.5	59.2	2.3	1.1	.7	4.1
1915–1919	1,545,706	1,731	4,469	186,532	192,732	.4	1.0	40.2	41.6	2.2	.8	.6	3.6
1920–1924	1,839,818	1,345	4,810	179,128	185,277	.2	.9	32.5	33.6	1.5	.8	.5	2.8

Blast furnaces

1907	1,566	9	11	456	476	1.9	2.3	97.1	101.3	11.5	2.7	1.8	16.0
1910	19,389	68	68	4,971	5,107	1.2	1.2	85.5	87.9	6.9	1.7	1.0	9.6
1911	21,479	52	54	3,303	3,409	.8	.8	51.3	52.9	4.8	.9	.8	6.5
1912	27,154	73	87	4,790	4,950	.9	1.1	58.8	60.8	5.4	1.0	.8	7.2
1913	31,988	86	80	4,749	4,945	.9	.8	58.1	59.8	5.3	1.0	.9	7.2
1914	26,572	45	77	3,935	4,057	.6	1.0	49.4	51.0	3.5	1.0	.7	5.2
1915	10,721	19	23	981	1,023	.6	.7	30.5	31.8	3.5	.6	.4	4.5
1916	14,905	23	57	1,763	1,843	.5	1.3	39.4	41.2	3.1	.9	.6	4.6
1917	36,202	79	93	4,440	4,612	.7	.9	40.9	42.5	4.4	.9	.5	5.8
1918	41,449	102	72	4,358	4,532	.8	.6	35.0	36.4	4.9	.8	.5	6.2
1919	32,889	94	67	3,745	3,906	1.0	.7	38.0	39.7	5.7	1.0	.5	7.2
1920	35,470	47	58	3,214	3,319	.4	.5	30.2	31.1	2.7	.9	.4	4.0
1921	15,486	23	24	1,160	1,207	.5	.5	25.0	26.0	3.0	.5	.4	3.9
1922	17,933	38	35	1,586	1,659	.7	.7	29.4	30.8	4.2	.4	.5	5.1
1923	29,698	53	68	2,702	2,823	.6	.8	30.3	31.7	3.6	.1	.5	4.2
1924	25,268	50	66	2,248	2,364	.7	.9	29.7	31.3	4.0	1.1	.5	5.6
1925	25,819	40	51	1,789	1,880	.5	.7	23.1	24.3	3.1	.9	.4	4.4
1926	25,893	42	63	1,881	1,986	.5	.8	24.2	25.5	3.2	.8	.5	4.5
1910–1914	126,582	324	366	22,578	23,268	.9	1.0	60.4	62.3	5.2	1.0	.8	7.0
1915–1919	136,166	317	312	15,287	15,916	.8	.8	37.4	39.0	4.7	.9	.5	6.1
1920–1924	123,854	211	251	10,910	11,372	.6	.7	29.4	30.7	3.4	.7	.5	4.5

Bessemer converters

1907	967	1	5	383	389	0.3	1.7	132.0	134.0	2.1	0.9	2.4	5.4
1910	5,070	20	18	1,943	1,981	1.3	1.2	127.7	130.2	7.9	.9	1.6	10.4
1911	5,155	6	24	1,237	1,267	.4	1.6	79.9	81.9	2.3	1.1	1.1	4.5
1912	6,521	9	37	1,892	1,938	.5	1.9	96.7	99.1	2.8	1.0	1.5	5.3
1913	6,885	16	42	1,610	1,668	.8	2.0	77.9	80.7	4.6	1.2	1.2	7.0
1914	4,470	6	25	685	716	.4	1.8	51.1	53.3	2.2	1.2	.9	4.3
1915	3,160	2	21	494	517	.2	2.2	52.1	54.5	1.3	1.4	.8	3.5
1916	4,070	13	34	848	894	1.1	2.8	69.5	73.4	6.4	2.1	1.2	9.7
1917	5,979	20	21	1,194	1,235	1.1	1.2	66.6	68.9	6.7	1.3	1.2	9.2
1918	5,881	13	18	877	908	.7	1.0	49.7	51.4	4.4	1.0	.8	6.2
1919	6,555	14	18	849	881	.7	.9	43.2	44.8	4.3	.5	.9	5.7
1920	6,907	5	9	750	764	.2	.4	36.2	36.8	1.4	.3	.6	2.3
1921	3,440	4	6	252	262	.4	.6	24.4	25.4	2.3	.4	.4	3.1

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Bessemer converters—Continued

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1922	4,778	2	8	233	243	0.1	0.6	16.3	17.8	0.8	0.5	0.3	1.6
1923	6,080	6	20	367	393	.3	1.1	20.1	21.5	2.0	.5	.5	3.0
1924	4,943	7	10	274	291	.5	.7	18.5	19.7	2.8	.6	.3	3.7
1925	4,834	9	10	115	134	.6	.7	7.9	9.2	.7	3.7	.2	4.6
1926	4,526	6	19	178	203	.4	1.3	13.1	14.8	2.7	4.7	.3	7.7
1910–1914	28,101	57	146	7,367	7,570	.7	1.7	87.4	89.8	4.0	1.1	1.3	6.4
1915–1919	25,645	62	112	4,262	4,436	.8	1.5	55.4	57.7	4.8	1.1	1.0	6.9
1920–1924	26,147	24	53	1,876	1,953	.3	.7	23.9	24.9	1.8	.4	.4	2.6

Open-hearth furnaces

1907	2,987	14	14	908	936	1.6	1.6	101.3	104.5	9.3	4.0	1.1	14.4
1910	9,739	29	53	3,028	3,110	1.0	1.8	103.6	106.4	6.0	2.4	1.4	9.8
1911	10,718	18	45	1,890	1,953	.6	1.4	58.8	60.8	3.4	1.1	.9	5.4
1912	17,355	47	99	4,039	4,185	.9	1.9	77.6	80.4	5.3	1.9	1.0	8.2
1913	20,604	35	95	4,368	4,498	.6	1.5	70.7	72.8	3.4	1.4	1.0	5.8
1914	12,877	14	41	2,484	2,539	.4	1.1	64.3	65.8	2.2	1.5	.8	4.5
1915	5,969	8	20	832	860	.4	1.1	46.5	48.0	2.7	.9	.6	4.2
1916	9,654	12	37	1,458	1,507	.4	1.3	50.3	52.0	2.5	.8	.9	4.2
1917	21,457	47	86	3,187	3,320	.7	1.3	49.5	51.5	4.4	1.2	.8	6.4
1918	26,410	71	103	3,983	4,157	.9	1.3	50.3	52.5	5.4	1.4	1.1	7.9
1919	22,685	53	71	3,103	3,227	.8	1.0	45.6	47.4	4.7	1.3	.8	6.8
1920	28,823	43	70	3,164	3,277	.5	.8	37.0	38.3	3.0	.8	.5	4.3
1921	12,783	9	21	1,082	1,112	.2	.6	28.2	29.0	1.4	.4	.5	2.3
1922	19,805	22	46	1,936	2,004	.4	.8	32.6	33.8	2.2	.9	.5	3.6
1923	24,917	42	74	2,145	2,261	.6	1.0	28.6	30.2	3.4	1.1	.7	5.2
1924	21,493	32	67	1,864	1,963	.5	1.0	28.9	30.4	3.0	.9	.5	4.4
1925	22,837	25	73	1,769	1,867	.4	1.1	25.8	27.3	2.2	1.0	.5	3.7
1926	22,727	51	67	1,322	1,440	.8	1.0	20.0	21.8	4.6	1.2	.5	6.3
1910–1914	71,293	143	333	15,809	16,285	.7	1.5	72.8	75.0	4.0	1.6	1.0	6.6
1915–1919	86,175	191	317	12,563	13,071	.7	1.2	48.6	50.5	4.4	1.2	.9	6.5
1920–1924	107,820	148	278	10,191	10,617	.5	.9	31.5	32.9	2.7	.9	.6	4.2

Foundries

1907	939	1	3	179	183	0.4	1.1	63.5	65.0	2.1	0.3	1.0	3.4
1910	16,885	7	78	2,615	2,700	.1	1.5	51.6	53.2	.8	1.0	.6	2.4
1911	13,499	18	57	1,970	2,045	.4	1.4	48.6	50.4	2.7	1.0	.6	4.3
1912	23,294	23	135	4,512	4,670	.3	1.9	64.6	66.8	2.1	1.5	.8	4.4
1913	24,605	22	118	5,236	5,376	.3	1.6	70.9	72.8	1.7	1.2	.8	3.7
1914	17,634	14	61	3,432	3,507	.3	1.2	64.9	66.4	1.6	1.0	.7	3.3
1915	1,309		2	118	120		.5	30.0	30.5		.2	.4	.6
1916	1,231	1	6	145	152	.3	1.6	39.3	41.2	1.6	.6	.7	2.9
1917	31,805	45	101	6,810	6,956	.5	1.1	71.4	73.0	2.8	1.0	.9	4.7
1918	32,181	23	106	5,482	5,611	.2	1.1	56.8	58.1	1.5	1.0	.7	3.2
1919	24,220	15	62	4,048	4,125	.2	.9	55.7	56.8	1.2	.8	.7	2.7
1920	35,300	13	97	6,688	6,798	.1	.9	63.2	64.2	.7	.8	.8	2.3
1921	15,388	9	34	2,756	2,799	.2	.7	59.7	60.6	1.2	.7	.8	2.7
1922	22,770	12	59	4,134	4,205	.2	.9	60.5	61.6	1.1	.9	.7	2.7
1923	38,660	26	126	7,171	7,323	.2	1.2	61.8	63.2	1.4	.8	.8	3.0
1924	37,325	21	143	6,820	6,984	.2	1.3	60.9	62.4	1.1	1.1	.8	3.0
1925	35,570	27	128	6,877	7,032	.3	1.2	64.5	65.9	1.5	1.3	.9	3.7
1926	41,501	26	178	7,376	7,571	.2	1.4	59.0	60.6	1.3	1.1	.9	3.3
1910–1914	95,917	84	449	17,765	18,298	.3	1.6	61.7	63.6	1.8	1.1	.7	3.6
1915–1919	92,746	84	277	16,604	16,965	.3	1.0	59.7	61.0	1.8	.9	.7	3.4
1920–1924	149,441	81	459	27,569	28,109	.2	1.0	61.5	62.7	1.1	.9	.8	2.8

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Bar mills

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1915	3,232	1	7	577	585	0.1	0.7	59.5	60.3	0.6	0.6	0.7	1.9
1916	3,042	4	11	783	798	.4	1.2	85.8	87.4	2.6	.5	1.1	4.2
1917	7,472	8	34	1,940	1,982	.4	1.5	86.5	88.4	2.1	1.0	1.0	4.0
1918	5,734	6	18	756	780	.3	1.0	43.9	45.2	2.1	.7	.7	3.5
1919	4,601	1	7	689	697	.1	.5	49.9	50.5	.4	.5	.7	1.6
1920	3,880	1	5	525	531	.1	.4	44.8	45.3	.5	.2	.5	1.2
1921	1,912	-------	5	228	233	-------	.9	39.8	40.7	-------	1.0	.6	1.6
1922	3,780	7	10	392	409	.6	.9	34.6	36.1	3.7	.8	.5	5.0
1923	4,003	-------	17	443	460	-------	1.4	36.4	37.8	-------	.7	.6	1.3
1924	4,093	2	7	285	294	.2	.6	23.2	24.0	1.0	.2	.5	1.7
1925	4,471	2	13	324	339	.2	1.0	24.2	25.3	.9	.9	.4	2.2
1926	3,042	1	10	146	157	.1	1.1	16.0	17.2	.7	.4	.3	1.4
1915–1919	24,081	20	77	4,745	4,842	.3	1.1	65.6	67.0	1.7	.7	.7	3.1
1920–1924	17,666	10	44	1,869	1,923	.2	.8	35.3	36.3	1.1	.6	.5	2.2

Heavy-rolling mills

1907	4,556	8	10	874	892	0.6	0.7	64.0	65.3	3.5	0.3	1.0	4.8
1910	9,442	19	57	2,167	2,243	.7	2.0	76.5	79.2	4.0	1.5	1.0	6.5
1911	12,409	9	48	1,636	1,693	.2	1.3	43.9	45.4	1.4	.9	.7	3.0
1912	16,258	20	41	2,395	2,456	.4	.8	49.1	50.3	2.3	.9	.7	3.9
1913	17,569	16	60	1,910	1,986	.3	1.1	36.2	37.6	1.7	.6	.6	2.9
1914	11,985	10	55	899	964	.3	1.5	25.0	26.8	1.5	1.0	.4	2.9
1915	7,148	10	24	596	630	.5	1.1	27.8	29.4	2.8	1.0	.3	4.1
1916	10,076	7	44	959	1,010	.2	1.5	31.7	33.4	1.4	1.3	.5	3.2
1917	20,530	30	87	1,784	1,901	.5	1.4	29.0	30.9	2.9	1.0	.5	4.4
1918	19,807	24	67	1,900	1,991	.4	1.1	32.0	33.5	2.4	.9	.5	3.8
1919	17,605	20	53	1,711	1,784	.4	1.0	32.4	33.8	2.3	1.1	.5	3.9
1920	20,787	12	34	1,638	1,684	.2	.5	26.3	27.0	1.2	.4	.4	2.0
1921	9,060	3	15	485	503	.1	.5	16.5	17.1	.6	.3	.3	1.2
1922	14,574	9	56	752	817	.2	1.3	17.2	18.7	1.2	.9	.4	2.5
1923	16,602	8	36	882	926	.2	.7	17.7	18.6	1.0	.8	.3	2.1
1924	13,162	18	39	789	846	.5	1.0	20.0	21.5	2.7	.8	.4	3.9
1925	16,553	13	50	747	810	.3	1.0	15.0	16.3	1.6	1.1	.3	3.0
1926	14,553	7	38	417	462	.2	.9	9.5	10.6	1.0	.8	.2	2.0
1910–1914	67,663	74	261	9,007	9,342	.4	1.3	44.4	46.1	2.1	.9	.6	3.6
1915–1919	75,166	91	275	6,950	7,316	.4	1.2	30.8	32.4	2.4	1.0	.5	3.9
1920–1924	74,944	50	180	4,546	4,776	.2	.8	20.2	21.2	1.3	.6	.4	2.3

Plate mills

1907	1,915	4	12	637	653	0.7	2.1	110.9	113.7	4.2	3.7	1.2	9.1
1910	3,287	7	27	602	636	.7	2.7	61.1	64.5	4.3	1.6	.7	6.6
1911	4,390	5	15	590	610	.4	1.1	44.8	46.3	2.3	1.0	.6	3.9
1912	5,128	2	25	893	920	.1	1.6	58.0	59.7	.8	2.0	.8	3.6
1913	5,430	3	25	725	753	.2	1.5	44.5	46.2	1.1	1.2	.6	2.9
1914	3,476	2	13	319	334	.2	1.2	30.6	32.0	1.1	1.0	.5	2.6
1915	2,086	1	9	121	131	.2	1.4	19.3	20.9	1.0	.6	.3	1.9
1916	4,681	3	15	436	454	.2	1.1	31.0	32.3	1.3	.7	.5	2.5
1917	6,764	4	22	766	792	.2	1.1	37.7	39.0	1.2	.9	.5	2.6
1918	9,650	8	19	1,446	1,473	.3	.7	49.9	50.9	1.7	.6	.7	3.0
1919	11,892	9	24	1,247	1,280	.3	.7	35.0	36.0	1.5	.5	.5	2.5
1920	11,928	9	23	1,147	1,179	.3	.6	32.1	33.0	1.5	.6	.4	2.5
1921	4,580	3	7	318	328	.2	.5	23.1	23.8	1.3	.3	.4	2.0
1922	6,198	2	26	581	609	.1	1.4	31.2	32.7	.6	.9	.5	2.0
1923	8,731	5	24	662	691	.2	.9	25.3	26.4	1.1	1.2	.4	2.7
1924	6,454	3	18	506	527	.2	.9	26.1	27.2	.9	.6	.5	2.6
1925	5,734	6	15	370	391	.4	.9	21.5	22.7	2.1	1.2	.4	3.7
1926	7,306	4	25	396	421	.2	1.1	18.1	19.4	1.1	1.0	.4	2.5
1910–1914	27,711	19	105	3,129	3,253	.3	1.6	48.0	49.9	1.8	1.4	.7	3.9
1915–1919	35,073	25	89	4,016	4,130	.2	.8	38.2	39.2	1.4	.6	.5	2.5
1920–1924	37,891	22	98	3,214	3,334	.2	.9	28.3	29.4	1.2	.8	.4	2.4

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Puddling mills

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1917	4,129	1	10	572	583	0.1	0.8	46.2	47.1	0.5	0.6	0.6	1.7
1918	2,712	3	4	370	377	.4	.5	45.5	46.4	2.2	.4	.6	3.2
1919	1,619	-------	1	140	141	-------	.2	28.8	29.0	-------	.1	.4	.5
1920	2,007	1	10	243	254	.2	1.7	40.3	42.2	1.0	.8	.6	2.4
1923	1,620	-------	3	280	283	-------	.6	57.6	58.2	-------	1.1	1.0	2.1
1924	814	-------	4	156	160	-------	1.6	63.9	65.5	-------	1.2	1.2	2.4
1925	1,108	-------	6	166	172	-------	1.8	49.9	51.7	-------	2.8	.9	3.7
1926	1,591	1	5	204	210	.2	1.0	42.5	43.7	1.2	1.5	.8	3.6
1917–1919	8,460	4	15	1,082	1,101	.2	.6	42.6	43.4	.9	.4	.6	1.9
1920–1924	4,406	-------	9	797	806	-------	.7	60.3	61.0	-------	.8	1.1	1.9

Sheet mills

1907	2,211	2	8	274	284	0.3	1.2	43.3	44.8	1.8	1.9	0.4	4.1
1910	18,501	28	52	3,310	3,390	.5	.9	59.6	61.0	2.9	.8	.6	4.3
1911	29,710	9	71	3,625	3,705	.1	.8	40.7	41.6	.7	.7	.4	1.8
1912	32,087	19	67	5,497	5,583	.2	.7	57.1	58.0	1.2	.7	.7	2.6
1913	25,938	21	67	3,717	3,805	.3	.9	47.8	49.0	1.6	.5	.6	2.7
1914	22,187	11	51	3,113	3,175	.2	.8	46.8	47.8	.9	.5	.6	2.0
1915	16,266	7	23	1,901	1,931	.1	.5	39.0	39.6	.9	.3	.5	1.7
1916	24,722	13	62	2,655	2,730	.2	.8	35.8	36.8	.6	.5	.5	1.6
1917	26,855	11	38	2,687	2,736	.1	.5	33.4	34.0	.8	.6	.5	1.9
1918	17,278	3	17	937	957	.1	.3	18.1	18.5	.3	.5	.2	1.0
1919	19,214	3	32	1,854	1,889	.1	.6	32.0	32.7	.3	.4	.4	1.1
1920	24,279	14	59	2,979	3,052	.2	.8	40.1	41.0	1.2	.7	.8	2.3
1921	15,845	5	38	1,702	1,745	.1	.8	35.8	36.7	.6	.5	.5	1.6
1922	24,391	10	66	2,951	3,027	.1	.9	40.3	41.3	.8	.8	.9	2.5
1923	29,814	14	61	2,390	2,465	.2	.7	27.6	28.5	1.0	.7	.5	2.2
1924	28,247	7	54	2,457	2,518	.1	.6	29.0	29.7	.5	.7	.5	1.7
1925	32,043	10	56	3,096	3,162	.1	.6	32.2	32.9	.6	.4	.6	1.7
1926	31,713	6	55	2,100	2,161	.1	.6	22.1	22.8	.4	.5	.3	1.2
1910–1914	128,423	88	308	19,262	19,658	.2	.9	50.0	51.1	1.4	.6	.6	2.6
1915–1919	104,335	37	172	10,034	10,243	.1	.5	32.1	32.7	.7	.4	.4	1.5
1920–1924	121,552	50	278	12,479	12,807	.1	.8	34.2	35.1	.8	.7	.6	2.1

Rod mills

1915	2,062	-------	10	229	239	-------	1.6	37.0	38.6	-------	0.7	0.5	1.2
1916	2,493	-------	16	259	275	-------	2.1	34.6	36.7	-------	1.9	.5	2.4
1917	4,951	7	23	699	729	0.5	1.5	47.1	49.1	2.8	1.4	.5	4.7
1918	3,249	5	11	350	366	.5	1.1	35.9	37.5	3.1	1.0	.6	4.7
1919	2,463	2	10	184	196	.3	1.4	24.9	26.6	1.6	1.4	.5	3.5
1920	3,729	1	9	344	354	.1	.8	30.7	31.6	.5	.5	.4	1.4
1921	2,099	-------	6	126	132	-------	1.0	20.0	21.0	-------	.7	.3	1.0
1922	2,645	1	5	196	202	.1	.6	24.7	25.4	.8	.5	.5	1.8
1923	3,224	1	10	189	200	.1	1.1	20.2	21.4	.6	1.3	.3	2.2
1924	2,828	1	7	127	135	.1	.8	15.0	15.9	.7	.7	.4	1.8
1925	2,907	2	7	146	155	.2	.8	16.7	17.8	1.4	1.0	.3	2.6
1926	2,569	2	8	119	129	.3	1.0	15.5	16.8	1.6	.7	.4	2.7
1915–1919	15,218	14	70	1,721	1,805	.3	1.5	37.7	39.5	1.8	1.3	.5	3.6
1920–1924	14,425	4	37	982	1,023	.1	.9	22.7	23.7	.6	.8	.4	1.7

Tube mills

1907	2,007	1	4	575	580	0.2	0.7	95.5	96.4	1.0	0.6	1.5	3.1
1910	9,767	3	25	1,608	1,636	.1	.9	54.9	55.9	.6	.4	.7	1.7
1911	13,676	1	53	2,080	2,134	(1)	1.3	50.7	52.0	.2	.8	.5	1.5
1912	17,080	10	60	2,154	2,224	.5	1.2	42.0	43.7	1.3	.8	.5	2.6
1913	18,909	15	72	1,586	1,673	.3	1.3	28.0	29.6	1.6	.7	.4	2.7

[1] Less than one-tenth of 1.

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Tube mills—Continued

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1914	13,906	7	39	1,195	1,241	0.2	0.9	28.6	29.7	1.0	0.6	0.4	2.0
1915	7,109	2	21	182	205	.1	1.0	8.5	9.6	.6	.6	.2	1.4
1916	11,355	2	26	425	453	.1	.8	12.5	13.4	.4	.3	.3	1.0
1917	19,819	17	51	1,967	2,035	.3	.9	33.1	34.3	1.7	.5	.4	2.6
1918	18,499	8	41	1,127	1,176	.1	.7	20.3	21.1	.9	.4	.3	1.6
1919	18,326	9	39	1,127	1,172	.2	.7	20.4	21.3	1.0	.6	.3	1.9
1920	22,666	13	71	2,166	2,250	.2	1.0	31.9	33.1	1.1	.5	.5	2.1
1921	14,622	4	35	840	879	.1	.8	19.1	20.0	.5	.5	.4	1.4
1922	19,535	6	40	1,332	1,378	.1	.7	22.7	23.5	.6	.6	.4	1.6
1923	24,766	8	54	1,292	1,354	.1	.7	17.4	18.2	.6	.6	.3	1.5
1924	22,655	14	68	1,185	1,267	.2	1.0	17.2	18.4	1.2	.6	.3	2.1
1925	25,511	10	64	1,142	1,216	.1	.8	14.9	15.9	.8	.6	.3	1.7
1926	32,089	9	95	1,524	1,628	.1	1.0	15.9	17.0	.6	.7	.2	1.5
1910–1914	73,338	36	249	8,623	8,908	.2	1.1	39.2	40.5	1.0	.7	.5	2.2
1915–1919	75,108	38	178	4,825	5,041	.2	.8	21.4	22.4	1.0	.5	.3	1.8
1920–1924	104,577	45	268	6,815	7,128	.1	.9	21.7	22.7	.9	.6	.4	1.9

Unclassified rolling mills

1910	14,434	15	49	4,861	4,925	0.3	1.1	112.3	113.7	2.1	1.6	1.3	5.0
1911	21,231	16	76	3,388	3,480	.3	1.2	53.2	54.7	1.5	1.1	.7	3.3
1912	22,909	16	76	4,660	4,752	.2	1.1	67.8	69.1	1.5	1.0	.9	3.4
1913	23,382	24	84	5,051	5,159	.3	1.2	72.0	73.5	2.0	1.1	1.0	4.1
1914	22,873	11	75	3,541	3,627	.2	1.1	51.6	52.9	1.0	.8	.7	2.5
1915	4,367	2	14	475	491	.2	1.1	36.2	37.5	.9	.5	.4	1.8
1916	8,082	5	25	922	952	.2	1.0	38.0	39.2	1.2	.6	.7	2.5
1917	27,978	10	60	4,265	4,335	.1	.7	50.8	51.6	.7	.7	.7	2.1
1918	37,163	22	74	4,015	4,111	.2	.7	36.0	36.9	1.2	.5	.5	2.2
1919	25,106	14	45	2,967	3,026	.2	.6	39.4	40.2	1.1	.4	.6	2.1
1920	21,055	16	68	2,785	2,869	.3	1.1	44.1	45.4	1.5	.9	.5	2.9
1921	12,068	4	36	1,479	1,519	.1	1.0	40.9	42.0	.7	.9	.7	2.3
1922	19,382	10	59	2,416	2,485	.2	1.0	41.5	42.7	1.0	.9	.7	2.6
1923	26,357	11	92	2,830	2,933	.1	1.2	35.8	37.1	.8	1.3	.6	2.7
1924	21,664	11	77	2,193	2,277	.2	1.2	33.5	34.9	1.0	1.3	.6	2.9
1925	26,353	9	59	1,836	1,904	.1	.8	23.2	24.1	.7	.5	.4	1.6
1926	25,268	5	66	1,783	1,754	.1	.9	23.5	24.5	.4	.7	.4	1.5
1910–1914	104,829	82	360	21,501	21,943	.3	1.2	71.8	73.3	1.7	1.1	.9	3.7
1915–1919	102,696	53	218	12,644	12,915	.2	.7	41.0	41.9	1.0	.5	.6	2.1
1920–1924	109,555	55	345	12,631	13,027	.2	1.0	38.4	39.6	1.0	1.1	.6	2.7

Fabricating shops

1907	2,081	6	12	571	589	1.0	1.9	91.5	94.4	5.8	2.9	0.8	9.5
1910	8,713	11	33	3,901	3,945	.4	1.3	149.2	150.9	2.5	1.0	1.9	5.4
1911	19,530	8	92	3,244	3,344	.1	1.6	55.4	57.1	.7	1.0	.6	2.3
1912	28,988	32	119	6,890	7,041	.4	1.4	79.2	81.0	2.1	.9	.8	3.8
1913	30,470	34	104	7,368	7,506	.4	1.1	80.6	82.1	2.2	.8	.8	3.8
1914	20,837	13	77	4,103	4,193	.2	1.2	65.6	67.0	1.2	1.0	.7	2.9
1915	3,818	3	15	471	489	.3	1.3	41.1	42.7	1.6	.6	.7	2.9
1916	4,980	7	25	703	735	.5	1.7	47.1	49.3	2.8	.7	.9	4.4
1917	23,614	21	67	4,192	4,280	.3	.9	59.2	60.4	1.8	.6	.7	3.1
1918	29,166	22	29	5,077	5,128	.3	.3	58.0	58.6	1.5	.5	.6	2.6
1919	19,407	6	27	2,752	2,785	.1	.5	47.3	47.9	.7	.3	.5	1.5
1920	17,216	14	68	2,721	2,803	.2	1.3	52.7	54.2	1.6	1.1	.6	3.3
1921	12,908	5	45	1,971	2,021	.1	1.2	50.9	52.2	.8	.7	.6	2.1
1922	16,184	14	41	3,381	3,436	.3	.8	69.6	70.7	1.7	.8	.8	3.3
1923	22,547	9	52	4,019	4,080	.1	.8	59.4	60.3	.8	.7	.7	2.2
1924	10,626	5	63	1,787	1,855	.1	1.0	28.3	29.4	.5	.8	.5	1.8
1925	15,718	3	35	857	895	.1	.7	18.2	19.0	.4	.9	.4	1.7
1926	15,467	7	64	756	827	.2	1.4	16.4	18.0	.9	1.0	.4	2.3
1910–1914	108,538	98	425	25,506	26,029	.3	1.3	78.3	79.9	1.7	.9	.8	3.4
1915–1919	80,985	59	163	13,195	13,417	.2	.7	54.3	55.2	1.5	.5	.6	2.6
1920–1924	89,880	47	269	13,879	14,195	.2	1.0	51.5	52.7	1.0	.8	.6	2.4

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Forge shops

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1917	3,881	3	15	917	935	0.3	1.3	78.8	80.4	1.5	1.6	1.3	4.4
1918	6,408	4	26	1,009	1,039	.2	1.4	53.2	54.8	1.2	1.1	.7	3.0
1919	2,169	2	4	257	263	.3	.6	39.5	40.4	1.8	.3	.6	2.7
1920	2,197	------	5	380	385	------	.8	58.6	59.4	------	.8	.7	1.5
1921	902	1	3	107	111	.4	1.1	39.5	41.0	2.2	1.0	.7	3.9
1922	1,514	2	8	233	243	.4	1.8	51.3	53.5	2.6	1.7	.9	5.2
1923	2,049	1	9	309	319	.2	1.5	50.2	51.9	1.0	.9	.7	2.6
1924	2,272	------	9	567	576	------	1.3	83.2	84.5	------	1.5	1.2	2.7
1925	3,794	3	11	893	907	.3	1.0	78.5	79.7	1.6	.9	.8	3.3
1926	1,790	------	7	263	270	------	1.3	48.7	50.0	------	.4	.7	1.1
1910–1914	6,249	8	19	1,080	1,107	.4	1.0	57.6	59.0	2.6	.6	.7	3.9
1915–1919	12,667	9	45	2,189	2,243	.2	1.2	57.6	59.0	1.4	1.1	.9	3.4
1920–1924	8,901	4	34	1,596	1,634	.1	1.3	59.8	61.2	.9	1.2	.9	3.0

Wire drawing

1910	10,370	5	84	2,323	2,412	0.2	2.7	74.7	77.6	1.0	2.6	0.7	4.3
1911	11,819	4	89	2,270	2,363	.1	2.3	59.0	61.4	.6	2.0	.6	3.2
1912	13,069	4	104	2,627	2,735	.1	2.7	67.1	69.9	.6	2.5	.7	3.8
1913	12,769	6	59	2,542	2,607	.2	1.5	66.4	68.1	.9	1.1	.7	2.7
1914	11,468	2	47	1,742	1,791	.1	1.4	50.6	52.1	.4	1.3	.5	2.2
1915	7,859	1	62	1,831	1,894	.3	2.6	77.7	80.3	.3	2.4	.8	3.5
1916	9,551	4	104	1,764	1,872	.1	3.6	61.6	65.3	.8	2.9	.6	4.3
1917	13,727	3	63	1,700	1,766	.1	1.5	41.3	42.9	.4	1.0	.6	2.0
1918	12,790	4	60	991	1,055	.1	1.6	25.8	27.5	.6	1.2	.4	2.2
1919	8,739	------	32	626	658	------	1.2	23.9	25.1	------	1.0	.4	1.4
1920	13,243	2	63	1,252	1,317	.1	1.6	31.5	33.2	.3	1.7	.5	2.5
1921	9,186	4	36	527	567	.1	1.3	19.1	20.6	.9	1.4	.4	2.7
1922	13,836	3	53	837	893	.1	1.3	20.2	21.6	.4	1.3	.4	2.1
1923	14,783	2	54	919	975	.4	1.2	20.7	21.9	.3	1.2	.4	1.9
1924	11,567	------	44	711	755	------	1.3	20.5	21.8	------	1.8	.3	2.1
1925	13,758	2	47	938	987	.1	1.1	22.7	23.9	.3	1.2	.4	1.9
1926	13,329	3	34	601	638	.1	.9	15.0	16.0	.5	.8	.3	1.6
1910–1914	59,481	21	383	11,504	11,908	.1	2.1	63.5	65.7	.7	1.9	.6	3.2
1915–1919	52,666	12	321	6,912	7,245	.1	2.0	43.7	45.8	.5	1.6	.5	2.6
1920–1924	62,614	11	250	4,246	4,507	.1	1.3	22.6	24.0	.4	1.5	.4	2.3

Electrical department

1910	1,526	2	3	282	287	0.4	0.7	61.6	62.7	2.6	0.9	0.7	4.2
1911	2,700	3	9	356	368	.4	1.1	43.0	44.5	2.2	.9	.5	3.6
1912	3,796	6	15	523	544	.5	1.3	45.9	47.7	3.1	1.7	.5	5.3
1913	4,012	14	15	495	524	1.2	1.2	41.1	43.5	7.0	1.2	.5	8.7
1914	2,327	8	6	301	315	1.1	.9	43.1	45.1	6.9	1.0	.5	8.4
1915	612	1	1	23	25	.5	.5	12.5	13.5	3.3	.2	.1	3.6
1916	1,635	6	6	289	301	1.2	1.2	58.9	61.3	7.3	.4	.8	8.5
1917	4,385	16	16	571	603	1.2	1.2	43.4	45.8	7.3	1.3	.7	9.3
1918	4,747	10	10	485	505	.7	.7	34.1	35.5	4.2	1.1	.4	5.7
1919	4,644	13	7	483	503	.9	.5	34.7	36.1	5.6	.9	.5	7.0
1920	4,473	5	3	403	411	.4	.2	30.0	30.6	2.2	.1	.4	2.7
1921	3,025	2	3	188	193	.2	.3	20.7	21.2	1.3	.6	.3	2.2
1922	3,528	4	1	164	169	.4	.1	15.5	16.0	2.3	.1	.4	2.8
1923	4,325	5	8	215	228	.4	.6	16.6	17.6	2.3	.4	.3	3.0
1924	3,989	7	6	171	184	.6	.5	14.3	15.4	3.5	.4	.3	5.2
1925	4,011	6	5	148	159	.5	.4	12.3	13.2	3.0	.6	.3	3.9
1926	4,611	6	6	131	143	.4	.4	9.6	10.4	2.6	.3	.3	3.2
1910–1914	14,921	33	48	1,967	2,038	.8	1.1	45.2	47.1	4.6	1.2	.5	6.3
1915–1919	16,023	46	40	1,851	1,937	1.0	.8	38.5	40.3	5.7	1.0	.5	7.2
1920–1924	19,339	23	21	1,141	1,185	.4	.4	19.7	20.5	2.4	.3	.3	3.0

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Mechanical department

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1908	1,619	4	7	430	441	0.8	1.4	89.1	91.3	4.9	0.6	1.1	6.6
1910	15,927	18	56	2,618	2,692	.4	1.2	54.8	56.4	2.3	.9	.5	3.7
1911	17,863	13	80	3,015	3,108	.2	1.5	56.3	58.0	1.5	1.1	.7	3.3
1912	21,591	19	95	4,040	4,154	.3	1.5	62.4	64.2	1.8	1.2	.8	3.8
1913	24,009	36	103	4,972	5,111	.5	1.4	69.0	70.9	2.9	1.0	.9	4.8
1914	17,772	18	60	3,149	3,227	.3	1.1	59.1	60.5	2.0	1.0	.7	3.7
1915	5,987	3	27	573	603	.2	1.5	31.9	33.6	1.0	.7	.4	2.1
1916	16,920	9	86	2,245	2,340	.2	1.7	44.2	46.1	1.1	1.5	.6	3.2
1917	33,328	43	134	5,201	5,378	.4	1.3	52.0	53.7	2.6	1.0	.8	4.4
1918	58,002	54	162	6,054	6,270	.3	.9	34.8	36.0	1.9	1.0	.4	3.3
1919	40,609	45	83	4,483	4,611	.4	.7	36.8	37.9	2.2	.7	.5	3.4
1920	34,648	26	68	3,767	3,861	.3	.7	36.2	37.2	1.5	.6	.5	2.6
1921	25,036	21	41	1,703	1,775	.3	.5	22.7	23.6	1.7	.5	.4	2.5
1922	30,324	25	75	1,626	1,726	.3	.8	17.9	19.0	1.6	.7	.3	2.6
1923	37,449	37	102	2,045	2,184	.3	.9	18.2	19.4	2.0	1.0	.3	3.3
1924	31,331	29	80	1,855	1,964	.8	.8	17.8	18.9	1.7	.6	.3	2.6
1925	36,666	31	71	1,717	1,819	.3	.7	15.6	16.6	1.7	.7	.3	2.7
1926	38,953	32	74	1,887	1,993	.3	.6	16.1	17.0	1.6	.6	.3	2.5
1910–1914	97,161	104	392	17,794	18,292	.4	1.3	61.0	62.7	2.1	1.1	.8	4.0
1915–1919	154,846	154	492	18,556	19,202	.3	1.1	39.9	41.3	2.0	1.0	.5	3.5
1920–1924	162,121	138	366	10,996	11,510	.3	.8	22.6	23.7	1.7	.7	.4	2.8
Power houses													
1917	4,552	7	7	210	224	0.5	0.5	15.4	16.4	3.1	1.0	0.3	4.4
1918	3,699	9	10	254	273	.8	.9	22.9	24.6	4.9	.5	.4	5.8
1919	4,093	11	2	213	226	.9	.2	17.3	18.4	5.4	.1	.2	5.7
1920	4,591	4	1	172	177	.3	.1	12.5	12.9	1.7	(1)	.2	1.9
1921	2,344	2	------	77	79	.3	------	10.9	11.2	1.7	------	.2	1.9
1922	3,361	------	5	115	120	------	.5	11.4	11.9	------	.7	.2	.9
1923	4,070	6	4	117	127	.5	.3	9.6	10.4	2.9	.4	.1	3.4
1924	4,511	5	8	157	170	.4	.6	11.6	12.6	2.2	.6	.2	3.0
1925	4,218	3	4	183	190	.2	.3	14.5	15.0	1.4	.3	.3	2.0
1926	3,446	3	3	56	62	.3	.3	5.4	6.0	1.7	.4	.1	2.2
1912–1914	8,083	6	21	544	571	.2	.9	22.4	23.5	1.5	.8	.3	2.6
1915–1919	13,219	27	21	739	787	.7	.5	18.6	19.8	4.1	.6	.3	5.0
1920–1924	18,878	17	18	638	673	.3	.3	11.3	11.9	1.8	.3	.2	2.3
Yards													
1907	2,618	5	10	509	524	0.6	1.2	64.8	66.6	3.8	2.6	1.1	7.5
1910	15,932	40	49	2,054	2,143	.8	1.0	43.0	44.8	5.0	1.0	.5	6.5
1911	9,085	11	43	1,336	1,390	.4	1.6	49.0	51.0	2.4	1.9	.7	5.0
1912	11,180	23	64	1,940	2,027	.7	1.9	57.8	60.4	4.1	1.4	.8	6.3
1913	11,859	28	50	1,807	1,885	.8	1.4	52.0	54.2	4.7	1.0	.7	6.4
1914	7,879	10	37	975	1,022	.4	1.6	41.2	43.2	2.5	1.4	.6	4.5
1915	3,843	------	15	417	432	------	1.3	36.2	37.5	------	1.0	.4	1.4
1916	7,853	12	56	929	997	.5	2.4	39.4	42.3	3.1	2.2	.6	5.9
1917	15,732	36	77	1,792	1,905	.8	1.6	38.0	40.4	4.6	1.7	.6	6.9
1918	16,354	33	62	1,526	1,621	.7	1.2	31.1	33.0	4.0	1.2	.6	5.8
1919	10,108	25	48	1,021	1,094	.8	1.6	33.7	36.1	4.9	1.9	.6	7.4
1920	12,087	10	33	922	965	.3	.9	25.4	26.6	1.7	1.3	.4	3.4
1921	5,840	6	22	422	450	.3	1.3	24.1	25.7	2.1	1.9	.5	4.4
1922	7,969	15	16	536	567	.6	.7	22.4	23.7	3.8	.5	.5	4.8
1923	8,381	12	35	693	740	.5	1.4	27.5	29.4	2.9	1.9	.4	5.2
1924	8,269	10	19	617	644	.4	.8	24.9	26.1	2.4	.9	.5	3.8
1925	7,683	12	24	755	791	.5	1.0	32.8	34.3	3.1	1.6	.6	5.3
1926	9,857	19	19	474	512	.7	.7	16.0	17.4	3.9	.6	.4	4.9
1910–1914	55,932	112	243	8,112	8,467	.7	1.5	48.6	50.8	4.0	1.4	.6	6.0
1915–1919	53,890	106	258	5,685	6,049	.7	1.6	35.2	37.5	3.9	1.6	.6	6.1
1920–1924	42,546	53	125	3,190	3,366	.4	1.0	25.0	26.4	2.5	1.2	.4	4.1

[1] Less than one-tenth of 1 per cent.

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Erection of structural steel

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
1915	803	8	7	251	266	3.3	2.9	104.2	110.4	19.9	4.3	1.2	25.4
1916	1,011	10	3	251	264	3.3	1.0	82.7	87.0	19.8	1.7	1.7	23.2
1917	1,156	12	15	442	469	3.5	4.3	127.5	135.3	20.8	4.0	2.2	27.0
1918	1,234	10	3	364	377	2.7	.8	98.3	101.8	16.2	2.0	1.4	19.6
1919	775	5	7	214	226	2.2	3.0	86.8	92.0	12.9	1.3	1.3	15.5
1920	637	6	12	204	222	3.3	6.6	111.8	121.7	19.7	3.7	2.5	25.9
1921	573	5	4	168	177	2.9	2.3	97.8	103.0	17.5	1.1	1.7	20.2
1922	595	5	2	129	136	2.8	1.1	72.3	76.2	16.8	2.5	1.8	21.1
1923	912	3	7	234	244	1.1	2.6	85.5	89.2	6.6	1.6	1.2	9.4
1924	1,009	10	10	291	311	3.3	3.3	96.1	102.7	19.8	3.4	1.9	25.1
1925	937	9	3	188	200	3.2	1.1	66.9	71.2	19.2	2.2	1.0	22.4
1926	774	11	5	180	196	4.8	2.2	78.3	85.3	28.4	2.3	1.3	32.0
1912–1914	2,157	26	24	738	788	4.0	3.7	114.0	121.7	24.1	5.5	1.8	31.4
1915–1919	4,979	45	35	1,522	1,602	3.0	2.3	101.9	107.2	18.1	2.6	1.6	22.3
1920–1924	3,726	29	35	1,026	1,090	2.6	3.1	91.8	97.5	15.6	2.5	1.8	19.9
Coke ovens [2]													
1915	1,648	2	4	128	134	0.4	0.8	25.9	27.1	2.4	0.6	0.3	3.3
1916	2,195	5	6	150	161	.8	.9	22.7	24.4	4.6	.5	.4	5.5
1917	6,641	26	10	508	544	1.3	.5	25.5	27.3	7.8	.5	.4	8.7
1918	9,395	21	14	662	697	.7	.5	23.5	24.7	4.5	.5	.4	5.4
1919	9,022	12	10	647	669	.4	.4	23.9	24.7	2.7	.6	.4	3.7
1920	8,620	6	11	518	535	.2	.4	10.0	10.6	1.4	.7	.3	2.4
1921	5,768	2	4	182	188	.1	.2	10.5	10.8	.7	.3	.2	1.1
1922	6,554	2	1	207	210	.1	.1	10.5	10.7	.6	.2	.2	1.0
1923	8,961	7	14	416	437	.3	.5	15.5	16.3	1.6	1.1	.3	3.0
1924	7,506	9	15	254	278	.4	.7	11.3	12.4	2.4	.9	.2	3.5
1925	7,599	4	14	142	160	.2	.6	6.2	7.0	1.1	.9	.2	2.2
1926	10,745	19	22	277	318	.6	.7	8.6	9.9	3.5	.7	.2	4.4
1912–1914	13,282	27	39	1,651	1,717	.7	1.0	41.4	43.1	4.1	1.5	.6	6.2
1915–1919	28,901	66	44	2,095	2,205	.8	.5	24.1	25.4	4.6	.5	.4	5.5
1920–1924	37,409	26	45	1,577	1,648	.2	.4	14.1	14.7	1.4	.7	.2	2.3
Miscellaneous departments													
Axle works													
1915	191	------	1	21	22	------	1.7	36.6	38.3	------	3.1	0.3	3.4
1916	372	------	------	17	17	------	------	15.2	15.2	------	------	.1	.1
1917	713	------	------	81	81	------	------	37.9	37.9	------	------	.9	.9
1918	609	------	3	156	159	------	1.6	85.4	87.0	------	3.9	1.1	5.0
1919	582	------	------	63	63	------	------	36.1	36.1	------	------	.7	.7
1920	743	------	------	100	100	------	------	44.8	44.8	------	------	.7	.7
1921	242	1	------	12	13	1.3	------	16.5	17.9	8.3	------	.5	8.7
1922	490	------	------	11	11	------	------	7.5	7.5	------	------	.1	.1
1923	774	------	------	30	30	------	------	12.9	12.9	------	------	.1	.1
1924	516	1	1	22	24	.6	.6	14.2	15.4	3.9	.2	.2	4.3
1925	436	------	------	6	6	------	------	4.6	4.6	------	------	.1	.1
1926	340	------	4	9	13	------	.4	.9	1.3	------	2.8	3.2	6.0
1912–1914	1,326	2	4	438	444	.5	1.0	110.1	111.6	3.0	2.1	1.6	6.7
1915–1919	2,467	------	4	338	342	------	.5	45.7	46.2	------	1.2	.7	1.9
1920–1924	2,764	2	1	175	178	.2	.1	21.1	21.5	1.4	(1)	.3	1.7

[1] Less than one-tenth of 1 per cent.

[2] This section of the table covers only those coke ovens operated in connection with steel works. For more complete information, see publications of the Bureau of Mines.

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Miscellaneous departments—Continued

Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
		Car wheels											
1915	389	.....	1	25	26	.....	0.9	21.4	22.3	.....	0.3	0.7	1.0
1916	734	2	2	348	352	0.9	.9	158.0	159.0	5.4	1.0	2.1	8.5
1917	1,296	3	4	250	257	.8	1.0	64.3	66.1	4.6	.4	.9	5.9
1918	1,866	1	.....	337	338	.2	.....	60.2	60.4	1.1	.....	.6	1.7
1919	1,619	1	11	353	365	.2	2.3	72.6	75.1	1.2	1.0	1.0	3.2
1920	1,215	.....	4	170	174	.....	1.0	46.7	47.7	.....	.9	.6	1.5
1921	552	1	2	92	95	.6	1.2	56.7	58.6	3.6	.5	.7	4.9
1922	1,102	.....	.....	78	78	.....	.....	23.6	23.6	.....	.....	.6	.6
1923	1,099	1	1	116	118	.3	.3	35.2	35.8	1.8	.2	.8	2.8
1924	1,083	1	3	137	141	.3	.9	42.2	43.4	1.8	.3	.8	2.9
1925	931	.....	3	69	72	.....	1.1	24.7	25.8	.....	1.3	.6	1.9
1926	792	.....	3	32	35	.....	1.2	13.3	14.5	.....	1.6	.4	2.0
1912–1914	2,367	3	15	609	627	.4	2.1	85.8	88.3	2.5	.9	1.3	4.7
1915–1919	5,904	7	18	1,313	1,338	.4	1.0	74.1	75.5	2.4	.5	1.0	3.9
1920–1924	5,050	3	10	595	608	.2	.7	39.3	40.2	1.2	.4	.7	2.3
		Docks and ore yards											
1915	115	.....	2	7	9	.....	5.8	20.3	26.1	.....	2.3	0.1	2.4
1916	195	3	2	16	21	5.1	3.4	27.4	35.9	30.8	7.3	.5	38.6
1917	353	2	1	78	81	1.9	.9	73.6	76.4	11.3	.7	1.0	13.0
1918	368	1	1	35	37	.9	.9	31.7	33.5	5.4	.3	.3	6.0
1919	352	.....	6	39	45	.....	5.7	37.0	42.7	.....	10.4	.5	10.9
1920	379	1	2	12	15	.9	1.8	10.6	13.3	5.3	2.9	.1	8.3
1921	255	.....	.....	11	11	.....	.....	15.6	15.6	.....	.....	.5	.5
1922	271	3	3	7	13	3.7	3.7	8.6	16.0	22.2	7.6	.3	30.1
1923	538	.....	3	15	18	.....	1.9	9.2	11.1	.....	3.9	.2	4.1
1924	340	.....	4	12	16	.....	3.9	11.8	15.7	.....	14.4	.3	14.7
1925	388	2	.....	7	9	1.7	.....	6.0	7.7	10.3	.....	.3	10.6
1926	389	.....	1	8	9	.....	.1	.7	.8	.....	2.6	.3	2.9
1911–1914	1,293	3	11	139	153	.8	2.8	35.8	39.4	4.6	2.8	.8	8.2
1915–1919	1,383	6	12	175	193	1.4	2.9	42.2	46.5	8.7	4.1	.5	13.3
1920–1924	1,761	4	12	57	73	.8	2.3	10.8	13.9	4.5	5.8	.3	10.6
		Woven wire fence											
1915	1,552	.....	10	294	304	.....	2.1	63.1	65.2	.....	1.2	0.5	1.7
1916	1,623	.....	18	180	198	.....	3.7	37.0	40.7	.....	3.0	.4	3.4
1917	1,269	.....	10	98	108	.....	2.6	25.7	28.3	.....	2.1	.4	2.5
1918	1,531	.....	5	77	82	.....	1.1	16.8	17.9	.....	1.0	.2	1.2
1919	1,336	1	4	35	40	0.2	1.0	8.7	9.9	1.5	.6	.2	2.3
1920	1,097	.....	6	48	54	.....	1.8	14.6	16.4	.....	2.9	.2	3.1
1921	1,095	.....	3	79	82	.....	.9	24.1	30.0	.....	.8	.4	1.2
1922	1,528	.....	6	85	91	.....	1.3	18.5	19.8	.....	.7	.4	1.1
1923	1,603	1	3	124	128	.2	.6	25.8	26.6	1.2	.5	.2	1.9
1924	1,301	.....	6	63	69	.....	1.5	16.1	17.6	.....	1.3	.2	1.5
1925	1,290	.....	2	105	107	.....	.5	27.1	27.6	.....	.2	.4	.6
1926	1,363	.....	6	83	89	.....	1.5	20.8	22.3	.....	.5	.3	.8
1915–1919	7,311	1	47	684	732	.1	2.1	31.2	33.4	.3	1.6	.3	2.2
1920–1924	6,623	1	24	399	424	.1	1.2	20.1	21.4	.3	1.2	.3	1.8

ACCIDENTS AND ACCIDENT RATES IN THE IRON AND STEEL INDUSTRY, 1907 TO 1926, BY DEPARTMENTS AND BY YEARS AND 5-YEAR PERIODS—Contd.

Miscellaneous departments—Continued

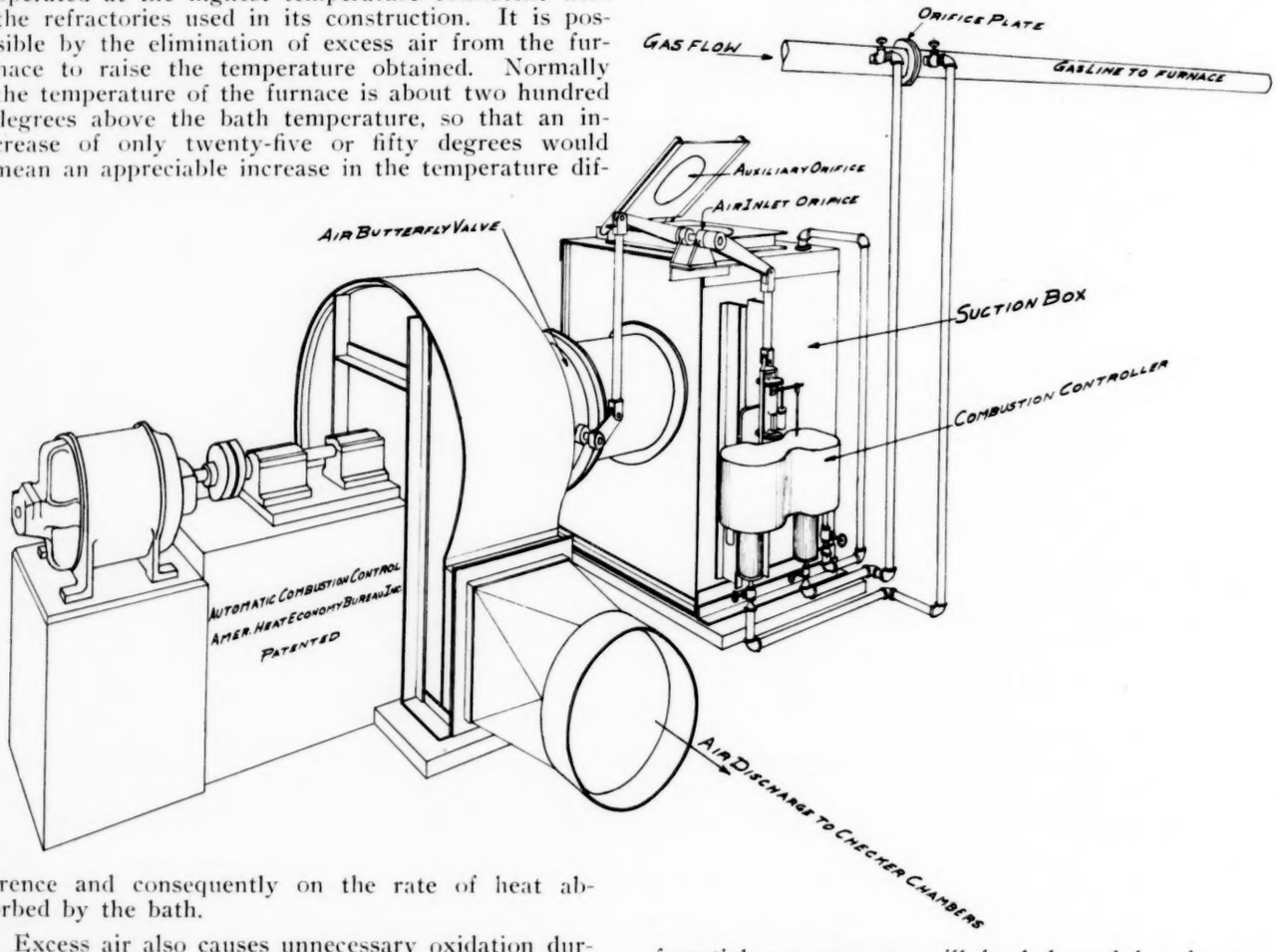
Year or period	Full-year workers	Number of cases				Accident frequency rates (per 1,000,000 hours' exposure)				Accident severity rates (per 1,000 hours' exposure)			
		Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total	Death	Permanent disability	Temporary disability	Total
		Nails and staples											
1915	1,546	1	12	181	194	0.2	2.6	39.0	41.8	1.3	1.7	0.3	3.3
1916	1,993	.....	10	236	246	.....	.2	39.5	39.7	.....	1.0	1.4	2.4
1917	2,323	1	16	184	201	.1	2.3	26.4	28.8	.9	2.1	.3	3.3
1918	1,916	.....	10	123	133	.....	1.7	21.4	23.1	.....	1.2	.2	1.4
1919	2,040	.....	8	58	66	.....	1.3	9.5	10.8	.....	.5	.1	.6
1920	2,364	.....	8	164	172	.....	1.1	23.1	24.2	.....	.8	.1	.9
1921	1,718	1	6	91	98	.2	1.2	17.7	19.0	1.2	.6	.3	2.1
1922	2,366	1	10	121	132	.1	1.4	17.0	18.5	.8	1.3	.3	2.4
1923	3,404	1	7	131	139	.1	.9	17.4	18.5	.8	1.2	.2	2.2
1924	1,939	.....	6	81	87	.....	1.0	13.9	14.9	.....	1.0	.2	1.2
1925	1,925	.....	6	88	94	.....	1.0	15.2	16.2	.....	1.6	.2	1.8
1926	2,658	.....	2	100	102	.....	.3	16.4	16.7	.....	.1	.2	.3
1915–1919	9,818	2	56	742	840	.1	1.9	26.5	28.5	.4	1.3	.3	2.0
1920–1924	10,890	3	37	588	628	.1	1.1	18.0	19.2	.6	1.0	.2	1.8
		Hot mills											
1923	6,374	2	9	820	831	0.1	0.5	42.9	43.5	0.6	0.4	0.5	1.5
1924	5,789	1	7	634	642	.1	.4	36.6	37.1	.3	.5	.6	1.4
1925	7,773	4	19	913	936	.2	.8	39.1	40.1	1.0	.7	.6	2.4
1926	4,319	4	15	834	853	.3	1.2	64.2	65.7	3.9	1.3	1.6	6.8
1920–1924	30,018	11	39	3,223	3,273	.1	.4	35.8	36.3	.7	.4	.5	1.6
		Cold rolling											
1926	1,824	.....	2	211	213	.....	0.4	38.3	38.7	.....	0.8	0.4	1.2
		Unclassified											
1915	21,547	16	41	2,749	2,806	0.2	0.6	42.5	43.3	1.5	0.6	0.6	2.7
1916	24,216	17	72	2,714	2,803	.2	1.0	37.4	38.6	1.4	1.4	.6	3.4
1917	71,249	65	164	8,165	8,394	.3	.8	38.2	39.3	1.8	.8	.5	3.1
1918	97,513	79	284	9,930	10,293	.3	1.0	33.9	35.2	1.6	.9	.5	2.9
1919	78,804	60	145	7,054	7,259	.3	.6	29.8	30.7	1.5	.7	.4	2.6
1920	104,741	72	261	11,208	11,541	.2	.8	35.7	36.7	1.4	.9	.5	2.8
1921	53,403	36	134	4,468	4,638	.2	.8	27.9	28.9	1.3	.8	.5	2.6
1922	79,405	39	233	6,848	7,120	.2	1.0	28.7	29.9	1.0	.8	.4	2.2
1923	95,138	52	273	9,719	10,044	.2	1.0	34.1	35.3	1.1	.9	.5	2.5
1924	93,018	66	285	8,032	8,383	.2	1.0	28.8	30.0	1.4	.9	.5	2.8
1925	132,291	45	308	10,648	11,001	.1	.8	26.8	27.7	.7	.7	.4	1.8
1926	112,826	58	306	8,325	8,689	.2	.9	24.6	25.7	1.0	.7	.3	2.0
1915–1919	293,329	237	706	30,612	31,555	.3	.8	34.8	35.9	1.6	1.3	.5	3.4
1920–1924	425,704	265	1,186	40,275	41,736	.2	.9	31.5	32.6	1.2	.9	.5	2.6

Proper Combustion For Furnaces

By W. P. CHANDLER, Jr.*

THE successful operation of a furnace depends almost entirely on the maintenance of the correct atmosphere in the furnace. The losses due to oxidizing or scaling the material in the furnace, the impregnation of the material by impurities, the rate of heating or production and the amount of fuel consumption, are all dependent on the maintenance of the proper proportion between the fuel consumed in the furnace and the amount of air admitted to the furnace for combustion. This is true for all types of furnaces in the steel industry.

In the case of the open hearth furnace, the rate of production and the amount of fuel consumption are particularly affected by the admission of the proper amount of air to burn the fuel consumed. In order that the slag may have the desired fluidity to purify the steel, it is essential that the furnace be operated at the highest temperature consistent with the refractories used in its construction. It is possible by the elimination of excess air from the furnace to raise the temperature obtained. Normally the temperature of the furnace is about two hundred degrees above the bath temperature, so that an increase of only twenty-five or fifty degrees would mean an appreciable increase in the temperature difference and consequently on the rate of heat absorbed by the bath.



Excess air also causes unnecessary oxidation during the melting down period, so that its elimination allows the use of a higher scrap percentage and a lower cost for materials charged. An insuffciency of air introduced with the fuel often allows sulphur which is present in the fuel to be absorbed by the scrap in the furnace and interferes with the production of low sulphur steel.

The automatic proportioning of the air used to the fuel supply will consequently give a greater production at a lower fuel consumption with reduced oxidation or absorption of impurities. The apparatus for accomplishing this purpose is shown in the accompanying illustration. An orifice plate in the fuel gas supply line produces a differential gas pressure which is balanced by the regulator against the suction in the suction box. The air for combustion is drawn by the fan through an orifice in the suction box and is controlled by a Butterfly valve operated by the regulator, so that the desired quantity is delivered to the furnace to burn the amount of fuel passing through the supply line. The orifice plates are designed the proper size so that the differential gas pressure will be balanced by the suction required to introduce the correct amount of air.

With such an apparatus, the furnace operator opens or closes the valve controlling the fuel supply and the air for combustion is automatically introduced into the furnace in the correct amount. The clogging of checkers does not interfere with the supply, the neglect of proper adjustment of the air

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saucers does not cause trouble with the operation of the furnace, tonnage is maintained and fuel consumption is reduced. On one plant having four producer gas fired open hearth furnaces, one furnace was equipped with an automatic combustion control and three furnaces were uncontrolled. The furnaces were operated in exactly the same manner and made the same grade of steel. The practice obtained from these furnaces is given in Table I.

TABLE I

	Ingot Tonnage produced	Lbs. of coal consumed	Lbs. of coal per ton	Average time of heat
Furnace equipped with Huessener Automatic Combustion Control	5,453	2,538,800	465	12:04
Average of three Uncontrolled Furnaces	4,909	2,716,800	554	13:14

The proper operation of billet heating furnaces requires that the fuel consumption be maintained at a minimum and that serious scaling be eliminated. Excess air must be removed from the furnace, if these requirements are to be met, and automatically proportioning the air used for combustion to the fuel supply is the simplest way to insure such operation. Such a control placed in operation on a billet heating furnace fired with by-product coke oven gas gave the analyses for the products of combustion throughout the range of gas flow required, as shown in Table II.

TABLE II.

Gas Flow—C.F.H.	Furnace Analyses CO2	O2	CO
16,000	9.3	1.7	0
21,000	9.2	1.5	0
25,000	9.4	1.3	0
30,000	9.1	1.8	0
35,000	8.8	2.1	0
38,500	9.2	1.5	0
43,500	9.4	1.3	0
48,500	9.4	1.4	0
53,000	9.3	1.5	0

Such analyses will not cause serious scaling, but for those furnaces which require the complete elimination of oxygen from the flame, the same close regulation may be maintained, but with carbon monoxide replacing in the same small amount the oxygen shown in the analyses. A one per cent scale loss in a furnace having a production of twenty tons per hour, or approximately 10,000 tons per month would amount to 1,200 tons in a year's time! and with a fifteen dollar differential between a ton of ore and a ton of billets, the loss would amount to $18,000.00. Such losses demand the most careful attention. They must be reduced to the smallest amount possible if a plant is to be operated at its best economy.

All types of furnaces have their own individual problems as regards to oxidation and fuel consumption. The large quantities of materials handled and the amount of fuel consumed, demand very careful supervision of the furnace atmosphere. In no way can this be accomplished with as much ease as by equipping the furnace with an automatic proportioning apparatus which feeds the air to the furnace in exactly the correct amount at all times.

Electrical Developments During the Year 1927

By WALTER BURR*

ANY change in conditions or any development which affects costs is naturally of vital importance in this period of keen competition. During the past year there have been numerous mergers of large power companies. A merger of power companies should mean a decreased power cost and a more reliable source of power.

By installing automatic sub-stations, the labor cost, which is a very important item, is reduced materially. To this end automatic sub-stations are being installed extensively. Net work relays protect the systems from transformer failure and now we read of the development of a device by means of which a load despatcher can pick up a telephone, call a sub-station number, place the telephone in front of a microphone, and by sending out tones of different wave lengths actually operate any oil switch which it may be necessary to control.

Such developments enable power companies to offer more attractive power contracts to those engaged in the manufacture of iron and steel and may make it more economical for these companies to purchase all power other than that generated from by-product fuels.

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TURBINE

The trend of development in steam turbines is steadily upward. A single-cylinder, single-generator unit, rated 75,000 KW, at 1500 RPM, is being built for the Buffalo General Electric Co.

As the result of recent developments, it was possible to design for the New York Edison Company the largest single-generator unit ever constructed. This machine which will be installed in the East River Station is rated 160,000 KW, with a single 1500 RPM, 25 cycle generator. The steam end is tandem-compound with a single-flow high pressure element and a double-flow low-pressure element.

Construction of a 165,000 KW, triple, 60 cycle, turbine-generator set is well under way. All three elements operated 1800 RPM and each main generator has a capacity of 53,000 KW at 0.85 power factor. Each low-pressure turbine will also drive a 3000 KW service generator. Each main and service generator will have its own direct-connected exciter.

A 208,000 KW, triple unit is being built for the State Line Generating Co., which will develop 22,000 volts. This will be the highest voltage used on any generator on a commercial system.

Considerable development work has been done on the operation of turbo-generators in an atmosphere of hydrogen and the tests so far have shown that a generator built primarily for hydrogen cooling can be made with 25 to 30 per cent less magnetic material than a machine operating in an atmosphere of air. This is not all clear gain, however, as the construction to retain hydrogen is very expensive. However, it is possible that as the art progresses this cost may be materially reduced, which would then show a substantial saving in the price per kilowatt of such machines over those operating in the air.

CABLES

The most notable advance in commercial cable practice was the putting in service of a six-mile line (18 cable miles) of 132-kv. single-conductor oil filled cable by the Commonwealth Edison Company, of Chicago, on June 2nd, and a twelve-mile (36 cable miles) circuit by the New York Edison-United Companies on August 9th.

Both lines were tested with 300,000 volts, using 400,000 volt direct-current kenotron sets. No failures occurred under this electrical test in either installation. The lines have each a capacity of 91,000 kva, thus bringing the capacity of a single cable line up to that of the largest generating units in service.

MILL DRIVES

The increase in use of synchronous motors for main roll drives is still very pronounced. One of the largest of these motors is rated 5000 HP, continuous at 40° rise, 100 RPM, 2200 volts, and will drive a continuous sheet bar mill. Another of similar size, but operating at 240 RPM will be used on a 51" piercing mill.

The demand for wide strip is still increasing and there is a tendency toward individual drives on each roll stand of the continuous mills. A large strip mill was placed in service this year which will produce strip up to 48" wide. On this mill the roughing stands are driven by AC motors and the finishing stands by DC motors. Another strip mill has been increased from 16" to 36" and all the driving motors are of slip ring type, with adjustable speed, obtained by the Scherbius system. The Scherbius speed regulating set used with the 5000 HP motor on this mill is of especial interest as it is the first application using two alternating current commutator type machines in series. This design permits the use of smaller and higher speed units, and the higher regulating voltage obtainable permits of designing the induction motor with a lower secondary current.

Two large mills of the continuous type for rolling skelp have been placed in operation during the year. Here again the type of motors used for driving the mills differs. One uses all DC motors, whereas the other uses AC motors on a portion of the stands and DC on the remaining stands. A unique feature of this installation is the method of tying together the Scherbius regulating machine for one of the induction motors and the DC generator furnishing power to motors on the finishing mill stands.

Very active strides have been made in the development of single-unit DC drives and during the year two installations of exceptionally large DC motors have been placed in service on mills for the production of wide flange beams.

TRANSFORMERS

Nor has the development been confined to generators and motors for an auto transformer rated 66,667 kva, 25 cycle, has been built during the past year. A standard transformer rated 31,400 kva, 60 cycle was placed in service. Most of these large transformers are of the oil-insulated self-cooled type.

On steel tower transmission lines operating on voltages above 66,000, the most satisfactory operation seems to be obtained by using an overhead ground wire.

CONCLUSION

Although activity in the steel industry during the past year has not been unusual, the development of electrical equipment has kept pace with the demand. In fact, there never was a period in the history of the steel industry when electrical developments have exerted so powerful an influence on the industry and there is every reason to believe that this influence will continue to increase throughout the coming year.

The A. I. & S. E. E. and Safety

By WALTER GREENWOOD*

THE matters that are most interesting to me are mostly reminiscences concerning past experiences that lead toward our present nation wide and, we might consistently add, world wide activities in accident prevention work. When first I became associated with the Association of I. & S. E. E., I recognized there was great possibilities for promoting safety by efforts of the Association. I might justly claim my own zeal in bringing safety features to the front when members were discussing electrical equipment and its installation did, in a considerable measure, contribute toward consuming so much of the Association's time it excluded full consideration of the subject for which the Association was organized to promote. As an instance of an attempt to consume the Association's time, at its annual meeting held in Hotel Schenley in this city in 1910, during the discussion of a paper concerning cranes I suggested that some sort of an automatic cut-out, which could be operated by movement of the crane, might be supplied for stopping bridge travel at any

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predetermined point, thus relieving the crane operator from the added responsibility of avoiding injury to anyone who might be required to be on a runway during operations. My suggestion was discarded with the brief announcement, which seemed to be pretty generally concurred in, that for many reasons it was impracticable. It did not get any discussion. However, I was not entirely satisfied with that decision and I afterwards insistently kept the matter before a prominent Electrical Superintendent until he became interested. The result was he developed a simple and inexpensive method for doing the trick. This method required the crane operator, after being notified, to place an attachment, carried in the cab, in position somewhere at a point where it would open the circuit and further travel of the crane would be limited to the drift which would be controlled by a brake automatically applied when the current was cut off from the magnet that held the brake open.

As a further illustration of the drift of our Association toward safety, at an annual meeting, held in New York in 1911, one of the speakers at the banquet, who delivered an excellent address on safety, evidently was under the impression our Association was organized primarily for the purpose of promoting safety. As most of you know, the result of so much safety discussion occupied so much attention, matters more exclusively the property of our Association could not get their deserved attention and consequently steps were taken by the Association that lead to the organization of the National Safety Council.

The primary purpose of this Association was promotion of engineering principles. So far as safety was concerned, of prime importance at the date of our organization was the application of engineering principles toward prevention of accidents. The propaganda used at the present day for arousing interest in safety work usually says, Mechanical safeguarding will prevent only a small percentage of accidents in the industries; usually the figure set is 25%. This may be true as regards mechanical safeguarding now required, but if applied to conditions as they existed before the safety movement got under way, it would be far from true. What would the proportion be if the countless installations of safeguards had not been made, of which the following is but a partial list. Guards for all kinds of moving parts of equipment, including openings in floors and ground was not all; isolating, insulating and grounding was not all; providing platforms, runways, stairs and elevators was not all; providing alarms, detector and signal devices was not all; and many more electrical and mechanical devices in the long list of installations was not all. We might add preaching, supplying literature and posting bulletins did not complete the list of requirements. Above all was the higher development of power equipment, the re-arrangement and expensive change from old and unsafe equipment to new more safe and better arranged, the introduction of new equipment and appliances to eliminate hazardous work, and all the other innovations and changes in electrical and mechanical equipment along with the changes that followed in the methods of operation, all of which required engineering skill, probably had more to do with the elimination of accident hazard than all other methods that have been adopted.

On reviewing results during the last twenty years we would say they show that accident hazard was reduced farther by mechanical engineering than by all other methods. We should not be misled by the statement, it was done by installing habits of caution in individuals as this, very likely, would result in failure to give the matter of safe operation the consideration it deserves from designers. If we were to consider there had been no change in the methods of construction, installation and operation of equipment in so far as the principles would affect safety, could we believe there would have been any reduction in the number of accidents that occurred during the last twenty years.

In closing I will say there is much room for betterment of equipment and methods that will reduce accident hazard. One of the reasons for failure to comply with suggestions that have been made is said to be inability to supply capital. Another reason is the difficulty about getting authorities to see that beneficial results would follow. Of course, proving the value of a suggestion takes time for proving by a practical installation in a single instance before universal installation can be made. All of the excuses are valid yet the effort to procure mechanical safeguarding must be pursued as diligently as ever.

ANNUAL CONVENTION

AND

IRON AND STEEL EXPOSITION

HOTEL STEVENS, CHICAGO, ILL.

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June 25-26-27-28, 1928

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AUSPICES

Electrical, Mechanical, Combustion and Safety Divisions
OF
Association of Iron & Steel Electrical Engineers

For Particulars Write to

ASSOCIATION OF IRON & STEEL ELECTRICAL ENGINEERS

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*Developments During The Year 1927**

STEAM POWER

STEAM shows no sign of losing its place as main source of power. It can be placed to some degree at will; its investment cost is moderate; the size of unit and of plant can be as large as desired, and it is very often cheaper than water power.

Stokers: In plants of any size, the old-time fireman has practically disappeared before the mechanical stoker; not only because the task has grown too large in size, but because hand-firing is not sufficiently accurate and uniform.

Stokers of dump grate and clinker grinder types have been developed farther toward burning more coal per square foot, and highest efficiency. For clinker grinder stokers apron shields prevent sifting of fine ash, objectionable because of pockets in the refuse bed, excess air in the furnace and loss of coal particles.

Tuyeres especially designed for preheated air (an important refinement in combustion) have much larger air openings than those for cold air.

Refinement in stoker drive include a special clutch on the turbo-gearbox, allowing dual drive—motor and turbine—for multiple retort stokers, and a gearbox allowing drive by motor instead of engine, for single retort stokers. More than double former efficiency is shown by this 120:1 spur-and-helical gearset, which has roller bearings throughout, and no oil leakage.

Steam Turbines: These continue to grow larger, —larger sets, larger single units, increased speeds at high ratings, and continued tendency to high pressures.

Industrial turbines designed for generating power in connection with process steam are interesting, and of increasing importance.

The general demand for beauty which is becoming evident in every industry has been recognized in the design of new types of turbine, consciously planned to please the eye as well as the engineering sense.

Small turbines merit, and have received, careful effort.

The limit in unit size is raised by the last unit for Hell Gate Station (United Elec. Lt. & Pwr. Co.) —168,000 KW. in two cylinders. The speed, 1800 r.p.m., is unprecedented in so large a machine. Condensers of record size (137,500 sq. ft.) will serve this turbine.

A turbine rating 10,000 KW. at 1200 lb. pressure is under way for Kansas City Power & Light Co. It exhausts at 300 lb. pressure into the station header feeding the other turbines.

A 900 lb. pressure, 4750 KW. industrial turbine is in highly satisfactory service. Other interesting turbines include ones of 15,000 KW. two of 30,000 KW. and two of 50,000 KW., of design conducive to high efficiency and improved reliability. The 50,000 KW. machines are fitted with a hydraulic impeller governor.

A 1000 KW. turbine bleeds its whole steam flow for process use, and then takes in 75% of the original flow, at atmosphere, and expands it to final exhause vacuum. This machine, for an oil company, has special governing arrangements.

A compact, efficient turbine-propeller blower unit needs a cylindrical space 5 ft. diameter, 7½ ft. long, and rates 75,000 cu. ft. per minute against 10 inch static pressure. On test it delivered 105,000 cu. ft. per minute against 8 inch static pressure. The impeller-type oil governor allows remote control.

Three such blowers, rating 276,000 cu. ft. per minute against 15 inch static head, will occupy 5 ft. by 17 ft. floor space—thought to be the largest blower capacity ever put in so small a space.

LARGE GENERATORS

A few decades ago, the engine-drive direct-current machine would have held a prominent place under this head—now it is completely absent among large units. Direct current generators of considerable size are found in steel mills, but will be mentioned under that head, as they are but parts of motor generator sets, as are also the direct current generators for railway use. Although the main drives of diesel-electric ships are becoming of considerable size (4000 h.p.) this capacity is usually divided among several generating sets.

The Steam-Turbine Generator: The capacity of the turbo generator far surpasses its nearest rival, the water-driven generator, but is still growing rapidly, carrying higher speeds into larger ratings. The limit of size (still some distance away) seems to be the heaviest rotor the railroads will carry. Westinghouse has cars up to 275,000 lb. though no rotors so far undertaken approach that weight.

Changes in design have raised other size limits —new, and stronger steel for rotors; structural steel construction for stators.

A pair of 94,000 Kv-a., 85% p.f., 1800 r.p.m. generators for the Hell Gate Station (United Lt. & Pwr. Co., N. Y.) are the largest single units ever built, for 1800 r.p.m Owing to the structural steel design, these generators will be shipped completely built and wound.

If it were not for the preceding set, a 110,000 KW. cross-compound unit for Brooklyn Edison Company would be startling. This set will have a pair of 68,750 Kv-a., 80% p.f., 1800 r.p.m. generators.

The structural steel design is a further development of the skeleton frame mentioned last year, which allows complete shipment of 1800 r.p.m. machines up to 75,000 Kv-a. Previously, machines larger than 12,500 Kv-a. had to be shipped in sections and assembled in the field.

Thinner, more reliable stator insulation has resulted from a new mica bond, of constant dielectric loss, and which does not swell.

A hydrogen-cooled generator of 7500 Kv-a., 3600 r.p.m. is being built, to determine the efficiency of the

*Furnished by Westinghouse Electric & Mfg. Co.

seals and joints; the possible increase in rating, and to demonstrate the various devices for maintaining proper gas density.

Turbine generator rotors are held together by long through bolts of huge size. Formerly great force was needed to screw up the nuts. Now a bolt-puller stretches these bolts beforehand, a man runs the nut down by hand, and the bolt is then released and clamps down. Results: no galling under nuts, no torsion in bolts, greater assurance of uniformly tight rotor.

OTHER SYNCHRONOUS POWER MACHINERY

Frequency Changers: The 40,000 Kv-a frequency changer of the Commonwealth Edison Company, Chicago, is the world's largest. It is equalled by another by a different builder—there is none larger.

Two 25,000 Kv-a. sets are notable for their variable ratio feature, by which they can be set to deliver a definite amount of power in a given direction without reference to variation of frequency or size of the two systems. They are also notably large—they include the largest induction motors ever built by Westinghouse. Built for Niagara, Lockport & Ontario Power Company.

A 30,000 Kv-a. frequency changer for Empire District Electric is unusually large, and is notable in that it is not going to a large city (Joplin, Mo., mining district.)

The big Philadelphia frequency changer, 35,000 Kv-a., which includes largest single-phase generator, 21,000 Kv-a., is shown in operation.

Synchronous Condensers: These machines this year are notable for higher speeds which mean less space, weight, losses. Examples are two 30,000 Kv-a. machines for 720 r.p.m., and 900 r.p.m. condensers of 10,000, 7500, and 5000 Kv-a. built this year. Previously maximum speed for machines of 10,000 to 5000 Kv-a. was 720 r.p.m. or less.

Like other power machine, synchronous condensers are being built of welded structural steel instead of castings.

Synchronous Converters: The largest railway converter ever built is a 25-cycle machine for the Long Island R. R. rated at 4000 KW. but capable of 6000 KW. for two hours.

The lack of space in such districts as Manhattan Island has produced very large lighting converters of very small dimensions. These two 25-cycle machines rate 4200 KW., ranging from 240 to 300 volts by combined transformer tap changing and field control. Among their novel features are double D. C. brushholders, cast aluminum support for A.C. brushholder stands, A.C. brushholders of die-cast bronze alloy. The base is of welded structural steel.

THE INDUSTRIES

Steel: Though the steel industry has been working only to about 70% of capacity, general prosperity in the country does not seem to have suffered as was feared. The present facilities being well up to the country's present needs, much expansion was not to have been expected, but there has been a notable tendency toward new equipment which will reduce labor, as for example, the wide strip mill, as compared with the old style sheet mill. As might be expected, in this case, the electrical equipment of the labor-economical mill is a larger proportion of the total cost, than the electrical equipment of the labor-expensive mill. The controversy steam vs. electricity is a dead issue except in special cases.

The outstanding achievement of the year was the new Homestead structural steel mill, conceded by European authorities to be the world's best. In it electrical equipment was carried further than ever before. So much description has already appeared little will be said here. Since its completion, electrical operation has actually produced a better grade output, to such a degree as to keep the Homestead mill busy when others were running at considerably reduced capacity.

A view of the main structural mill motor room shows 54,000 h.p. in eleven units ranging from 1500 KW. motor generator sets up to 7000 hp. reversing mill motors.

9000 hp. drives the universal beam mill. A 7000 hp. 50/80 r.p.m. motor drives main rolls; a 2000 hp. 57/163 r.p.m. motor drives edging rolls. Both receive power from a pair of 3000 KW. generators. It is notable that while the relative speeds of these motors can be varied for different passes, during each pass their relationship is fixed.

One man controls the entire operation of the 52" universal mill, from the pulpit.

Before starting, all the operations of rolling a steel section are set up beforehand on switchboards —sequence of speeds on the plug board in this picture, sequence of roll spacings on another board. A single man then handles the whole operation from this seat. The foot switch starts and stops the rolls; the roll setup for each pass is made by a touch on the knob-handled round controller seen beyond the seat; the glowing steel is juggled back and forth outside the rolls by the ten vertical handles on the bench. Not only does one man do what might require several; the product is more accurate and actually more salable.

For Jones & Laughlin Steel Corporation, a new design 3000 hp. mill motor on soleplates instead of on a bedplate, will drive a 32 inch reversing bar mill supplying round billets to be pierced for seamless steel tubing. This is one of the first reversing steel mill motors fed by synchronous motor-generator set.

Intended for a tandem wide strip mill, six 2500 hp. 160/320 r.p.m 600 volt D.C. motors, varied in speed only 1 r.p.m. from no load to 100% overload. Such constant speed is valuable in a tandem mill. The motors are now in the Gary plant of the American Sheet & Tinplate Co.

Equipment for the heaviest powered tandem strip mill consists of four induction motors totaling 3800 hp. and seven direct current motors totaling 18,000 hp., 600 volt D.C. power will be supplied by three 4000 KW. synchronous motor generator sets.

INDUSTRIAL ELECTRIC HEAT

Electric heat has for years suffered under the reputation of being an expensive luxury. It is fast being realized that it is often a marked economy The proper measure of the price of heating is not the cost per B.T.U., but the whole cost (and quality) of the finished product. Electric heat is not often cheaper, kilowatt-hours against cubic feet of gas or tons of coal; but it very often is cheaper in consid-

ering faster production, better quality, less rejects and spoilage, far less labor. Actual examples follow.

Ball bearing races are of costly steel. This, with their accurate machining and inspection, makes rejections very expensive. The life of the bearing depends largely on the accuracy of its heat-treatment. The rotating hearth of the electric furnace advances step-by-step at a fixed rate, carrying with it individual alloy plans carrying the work. Temperature and time are exactly correct, and at the proper point, the work is automatically discharged into the quench. This is the first such furnace with this feature. It is thought, also the first furnace with an intermittent, and adjustable hearth advance.

A somewhat similar rotary hearth furnace for drop-forged wrenches has an automatic feed. Both these furnaces are 7 feet diameter. Other rotary hearth furnaces are used in treating automobile axle parts; also for treating cap screws, nuts, bolts, etc.

A pusher furnace for piston pins, bolts, small shafts, etc., allows various streams of pieces to go through the furnace in different order or speed, thus giving different treatments to different pieces at the same time. The operator lays the work in one of the little grooves in the foreground, whence it is pushed through by the rocker-arms shown, whose movement is governed by the series of cams. When finished, the work discharges at the far end to the "quench" through a sealed chute.

A large furnace for normalizing shafts, and box carburizing has in conjunction a double deck recuperative chamber. A hot charge from the furnace and a cold charge to be heated are at all times in the recuperative chamber. A considerable preheating is effected. Charges are placed on alloy trays and are handled by special fork.

In a large brass works, electric heat saves much tubing formerly ruined during annealing. Too much heat burned it—too little heat left it hard, so it was damaged in drawing. Two large double and box furnaces were "tailored" to fit this particularly difficult location. Oil furnaces preheat to within 200°F. of the desired temperature; the electric furnaces bring the entire charge accurately to final temperature and provide a proper "soak."

Perhaps the largest electric furnace ever built was finished this year. Used for vitreous enameling of stove parts, it has two chambers 125 feet long, through which a conveyor travels. 20 ft. 8 inches in the center of each chamber is the high temperature zone. The furnace eliminates much spoilage, and an astonishing amount of handling, hand-trucking and other labor, beside greatly increasing output.

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*Developments During The Year 1927**

TURBINES

High-pressure

During the year, eleven turbine-generator sets ranging in capacity from 40,000 to 91,500-kw. were operating at 550 to 600 lb. pressure. In addition to these, two sets were operating at 1200 lb. pressure. No difficulty developed in any of these machines which could be attributed to the use of high-pressure steam.

The third turbine designed for operation on 1200 lb. pressure was placed in commercial service. This is a 10,000-kw. 12,500-kv-a. 3600-r.p.m. unit located in the Edgar Station of the Boston Edison Company. It exhausts through a separate super-heater into the 375-lb. mains.

There are now installed or under construction a total of twenty-one G-E turbines designed for steam pressures of 550 lb. and higher with an aggregate capacity of 1,148,500 kw.

Single-cylinder

The 65,000-kw. unit referred to in last year's review is now in service in the Edgar Station of the Boston Edison Company, and is the largest single-cylinder unit in operation.

A still larger machine is now being built. It is a single-cylinder single-generator unit for the Buffalo General Electric Company and is rated 75,000 kw. at 1500 r.p.m., which is a new record size for this type of machine.

In smaller capacities, new designs of 15,000-kw. 1800-r.p.m. and 10,000-kw. 3600-r.p.m. units were developed to embody in their construction all the new features which would tend to increase the efficiency of machines of this capacity.

Tandem-compound

One 94,000-kw. unit of this type for the Southern California Edison Company was completed and tested.

As the result of recent developments, it was possible to design for the New York Edison Company the largest single-generator unit ever constructed. This machine, which will be installed in the East River Station, is rated at 160,000 kw. with a single 1500-r.p.m. 25-cycle generator. The steam end is tandem-compound with a single-flow high-pressure element and a double-flow low-pressure element.

An unusual feature in the construction of this generator is the fact that the stator winding is composed of two separate windings which are identical in all respects but are electrically separate so that the capacity of each is 80,000 kw. The two windings are connected through two generator breakers to adjacent bus sections.

The advantages afforded by this construction are: (1) the reduction in generator breaker capacity caused by the use of two generator breakers, (2) the elimination of bus reactors made possible by the transfer of power taking place through the coupling effect of the two separate windings, and (3) the in-

*Furnished by General Electric Company.

creased stability obtained by omitting the bus reactors.

Cross-compound

The 91,500-kw. cross-compound turbine now in service in the Crawford Avenue Station of the Commonwealth Edison Company is the first unit to operate with steam reheated, after partial expansion, by steam at boiler pressure and temperature in a heat exchanger. Previously the steam has been reheated in special reheat boilers. This unit was the first to develop a capacity of over 100,000-kw.

Construction of the 165,000-kw., triple, 60-cycle turbine-generator set for the Philo Station of the Ohio Power Company was well under way. This set is designed for an initial pressure of 600 lb. and a steam temperature of 725 deg. The steam will be reheated to the original temperature between the high-pressure and the two low-pressure elements. All three elements operate at 1800 r.p.m. and each main generator has a capacity of 53,000 kw. at 0.85 power-factor. Each low-pressure turbine will also drive a 3000-kw. service generator. Each main and service generator will have its own direct-connected exciter. The generators are of special cosntruction so as to be suitable for the possible future use of hydrogen as the cooling medium.

Work on the 208,000-kw. triple unit for the State Line Generating Company was progressing satisfactorily.

Turbine-generators

The use of a fabricated structure for armature frames on all large turbine-generators has the advantage of minimizing foundation requirements and also makes it possible to ship completely assembled and wound machines of much greater capacities than would be possible with cast frames. An excellent example of this construction is found in a 100,000-kv-a. generator for the Southern California Edison Company, the stator of which, despite its large size, will be shipped as a unit with punchings and windings assembled.

The generators of the 208,000-kw. set for the State Line Generating Company will develop 22,000 volts, and in order to study the action of this potential on the insulation, sample coils were made up which were repeatedly tested at 75,000 volts with no indication of distress. Similar coils are now undergoing a laboratory life test at 33,000 volts, which is approximately 2.6 times the "Y" voltage of the system on which they will operate.

The 6250-kv-a. generator, which was designed for operation in an atmosphere of hydrogen, was tested during the year and the results substantially checked the estimates that had been made from theoretical considerations.

Briefly, the tests so far have shown that a generator built primarily for hydrogen cooling can be made with 25 to 30 per cent less magnetic material than a machine operating in an atmosphere of air. This is not all clear gain, however, as the construction to retain hydrogen, according to our present knowledge, is very expensive. However, it is possible that as the art progresses this cost might be materially reduced, and would show a substantial saving in the price per kilowatt of such machines over those operating in air.

Apart from the consideration of first cost of the machine, there is a distinct advantage in favor of the hydrogen-cooled generator in the matter of reduced losses, and owing to the absence of an oxidizing atmosphere it is probable that the life of the windings will be materially increased.

CONDUCTOR CABLE

The most notable advance in commercial cable practice was the putting in service of a six-mile line (18 cable miles) of 132-kv. single-conductor oil-filled cable by the Commonwealth Edison Company of Chicago, on June 2nd, and a twelve-mile (36 cable-miles) circuit by the New York Edison-United Companies on August 9th.

Both lines were tested with 300,000 volts, using 400,000-volt direct-current kenotron sets. No failures occurred under this electrical test in either installation. The lines have each a capacity of 91,000 kv-a., thus bringing the capacity of a single cable line up to that of the largest generating units in service.

Another development in the use of single-conductor cables in connection with three-phase high-tension circuits was the installation by the New York Edison Company of three single conductors in one conduit on a 45-kv. circuit; showing favorable economic results due to the use of a single conduit over the former practice of a separate conduit for each conductor of the circuit.

There were further large installations during the year of single-conductor cable for 66-kv. circuits, notably in Philadelphia and Chicago.

Practically all circuits from 75 to 33-kv. inclusive are now using oil-filled joints and auxiliary reservoirs to take care of the expansion and contraction of the oil due to variations in temperature and to keep the joint and cable adjacent to the joint under oil pressure. Tests have shown that such joints when properly designed have a dielectric strength equalling or exceeding that of the cable itself.

An improvement in connection with the use of single-conductor cables, particularly those of large size used on alternating-current circuits, was the insertion of insulating joints in the sheaths of the cable, and cross bonding of the sheaths in such a way as to neutralize the induced voltages in the lead sheaths. This results in a reduction of the losses due to such circulating currents and increases the current-carrying capacity of the line by about 15 or 20 per cent.

STEEL MILLS

The decreased activity in the iron and steel industry resulted in a considerable reduction, as compared with the year 1926, in the number and total horse power of electric motors applied to main roll drives. In spite of this, however, the year's additions brought the total installed capacity of G-E rolling mill motors, of 300 h.p. and above, to more than 1,000,000 h.p.

A large equipment of unusual interest was placed in operation at the Lackawanna Plant of the Bethlehem Steel Company. The mill to which the motors were applied is used to produce wide flange beams. It consists of three units: a 54-in. reversing blooming mill, a 48-in. intermediate mill, and a 48-in. finishing mill. The blooming mill, which is one of the two

largest reversing blooming mills in this country, is driven by a single-unit direct-current reversing motor rated 7000 h.p. continuously at 50 deg. C. rise and 40/80 r.p.m. This motor is capable of exerting a maximum torque of 2,400,000 lb. at one foot radius. Direct current is supplied from a flywheel motor-generator consisting of a 5000-h.p. 375-r.p.m. 6600-volt induction motor, a 50-ton flywheel, and two 3000-kw. 750-volt generators which are operated in parallel.

The 48-in. intermediate mill consists of two separately-driven stands of rolls. The main stand has two horizontal and two vertical rolls, and is driven by a reversing motor rated 7000 h.p. continuously at 50 deg. C. rise and 65/125 r.p.m. The second stand, known as the supplementary mill, is driven by a direct-current reversing motor rated 1500 h.p. continuously at 50 deg. C. rise and 65/225 r.p.m. The flywheel motor-generator which furnishes power to both these reversing motors consists of a 5000-h.p. 375-r.p.m. 6600-volt induction motor (duplicate of that on the blooming mill set), two 3000-kw. generators for the main motor, a 3000-kw. generator for the supplementary motor, and a 50-ton flywheel.

The 48-in. finishing mill equipment is exactly the same as that used to drive the intermediate mill. The total capacity of the main equipment for the blooming, intermediate, and finishing mills is about 71,000 h.p.

The layout of the rail mill at the Lackawanna Plant of the Bethlehem Steel Company will be changed. The 44-in. reversing blooming mill will have a driving motor rated 7000 h.p. continuously at 50 deg. C. rise and 50/120 r.p.m. Blooms from this mill will go to a 36-in. reversing roughing mill which will be driven by a direct-current motor rated 5000 h.p. continuously at 50 deg. C. rise and 50/120 r.p.m. Power for these two reversing motors will be obtained from a single, flywheel motor-generator consisting of an 8000-h.p. 375 r.p.m. 6600-volt induction motor, two 3000-kw. 375-r.p.m. 750-volt generators operating in parallel to supply power to the 7000-h.p. blooming mill motor, two 2200-kw. 450-volt generators operating in series to supply power to the 5000-h.p. roughing mill motor, and a 75-ton flywheel.

The increase in the use of synchronous motors for main roll drives was made noteworthy by seven such applications totalling 12,600 h.p. The largest of these was rated 5000 h.p. continuously at 40 deg. C. rise and 100 r.p.m. 2200 volts, and will be used to drive a 19-in. continuous sheet bar mill at the Kokomo Plant (Ind.) of the Continental Steel Corporation. A motor of the same horse power rating but at 240 r.p.m. will be used to drive a 51-in. piercing mill installed by the Standard Seamless Tube Company of Economy (Penn.). The remaining five motors, two of which are 400 h.p. and three 600 h.p., will drive copper and brass rolling mills.

Equipments placed in operation during the year for continuous rolling of wide hot strip included eight large motors totalling 16,000 h.p. at the plant of the Weirton Steel Company at Weirton (W. Va.). Three of the motors are each rated 1500 h.p. and take their power direct from the 6600-volt 60-cycle power supply. Of the five motors on the finishing stands, two are of 2000 h.p., 200/400 r.p.m., 600 volts, direct current, and three are 2500 h.p., 200/400 r.p.m., 600 volts direct current.

The hot-strip mill of the Trumbull Steel Company at Warren (O.) was rearranged for continuous rolling. Scherbius-controlled induction motors are used, the last three stands being individually driven. The main roll drives on this mill total 12,500 h.p.

There was placed on the market during the early part of the year the new line of direct-current mill-type motors which were designed in collaboration with the Standards Committee of the Association of Iron and Steel Electrical Engineers, and which fully meets the standard specifications set up by this Committee.

ELECTRIC WELDING

The developmental work on atomic hydrogen arc welding was completed and a commercial equipment was produced for welding on 60-cycle circuits.

With this method of arc welding, an alternating current is maintained between adjustable tungsten-wire electrodes and hydrogen is fed to the arc around the electrodes. The hydrogen molecules are broken up into atoms by the intense heat and, in recombining outside of the arc and in contact with the work, heat is liberated far in excess of that obtainable by any gas flame alone. This heat is used to fuse the metals to be joined and, where additional metal is required, a filler rod may be fused into the work.

The hydrogen, being an active reducing agent, prevents the formation of oxides and hence produces a uniformly strong, ductile, and smooth weld. The metal being welded is not in the electric circuit and need not be grounded or insulated. The arc, constantly maintained, but broadly adjustable in size and intensity, lends itself to a wide range of work. Welds are executed at rates of speed comparable with those attained with a single oxy-acetylene torch.

A transformer furnishes the required voltage, and the current at the arc is controlled by an automatic reactor. In this process, high voltage and low currents are required in the arc, which is the reverse of the conditions in ordinary arc welding. The arc is struck at 300 volts; but while welding, the arc voltage is varied from 90 volts for light work to 60 for heavier, and the current correspondingly varied from 20 to 70 amp.

By this means homogeneous ductile welds can be made on very thin metals or on some metals and alloys hitherto considered unweldable.

The line of single-operator variable-voltage arc-welding sets was extended by putting into production a new machine having a rating of 300 amp. for one hour, 50 deg. C. rise. It has a self-excited generator with current adjustment obtained by shifting the brushes, and is driven by a standard 15-h.p. motor.

The use of automatic welding continued to increase. One important field of application which showed considerable expansion was the manufacture of arc-welded steel pipe. The largest automatic machine produced during the year will weld the longitudinal seam of a steel pipe 36 ft. long.

Automatic welding equipment for the manufacture of steel railroad ties constructed from scrap rails was put in service at the Colonie Plant of the Delaware and Hudson Railroad Company. The tie consists of two pieces of worn or scrap rail cut to

length and held together at both ends by angle bars which are welded to the pieces of rail. These sections of rail are further held together by two tie plates which are welded to the top or head of the rails at the point where the track work is clamped to the tie.

CENTRIFUGAL COMPRESSORS

Modern blast-furnace practice is demanding higher plant efficiency and the latest move in this direction was recently made by the Youngstown Sheet and Tube Company in adopting three 70,000-cu. ft. per min. blast-furnace compressor units with turbine drivers designed to operate with steam at 400 lb. gauge, and provided with three-stage extraction openings for heating the condensate to boiler-fed temperature. Steam extraction has been applied to many large constant-speed turbine-generators for feed-water heating but this is the first instance where this principle has been extended to a variable-speed blast-furnace turbine compressor.

MOTOR CONTROL

A number of blast-furnace skip-hoist equipments were designed for generator-voltage control instead of the rheostatic control which has been used almost exclusively for this service in the past. One such equipment for the Bethlehem Steel Company uses a two-motor drive operated from a single generator, the two-motor drive permitting operation at reduced capacity in case of the failure of either motor. The load on this skip varies widely in handling coke or ore, and generator-voltage control is particularly suitable because of the accurate low speeds which can be obtained for dumping the skip regardless of the load.

This method of control was also applied in the operation of a 100-ton freight-car elevator. The car is started by means of a push button and is automatically slowed down and stopped at the track level by limit switches.

Rolling Mill Drives Purchased During the Year 1927

HP.	RPM.	Volts	Cyc.	Type of Mill	Drive	Date	Customer and Location	Mfgd. By
300	175-300	230	DC	Tube Mill	Direct	1927	Babcock & Wilcox, Beaver Falls, Pa.	WE
300	175-300	230	DC	Tube Mill	Direct	1927	Babcock & Wilcox, Beaver Falls, Pa.	WE
300	300-650	250	DC	10" Rod Mill	Direct	1927	Washburn Wire Co., Phillipsdale, R. I.	WE
300	300-650	250	DC	10" Rod Mill	Direct	1927	Washburn Wire Co., Phillipsdale, R. I.	WE
300	720	4150	60	Piercing Mill	Geared	1927	Public Service Prod. Co., Plainfield, N. J.	GE
300-	400-800	230	DC	14"-4-High Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co., Rome, N. Y.	GE
350	350	2200	60	Seamless Tube Mill	Geared	1927	Timken Roller Bearing Co., Canton, O.	WE
350	485	2200	25	Cont. Sheet Mill	Geared	1926	Amer. Sheet & Tinplate Co., Gary, Ind.	GE
350	485	2200	25	Cont. Sheet Mill	Geared	1926	American Sheet & Tinplate Co., Gary, Ind.	AC
350	485	2200	25	Cont. Sheet Mill	Geared	1926	American Sheet & Tinplate Co., Gary, Ind.	AC
400	277	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co., Phillipsdale, R. I.	AC
400	350	230	DC	Tube Reeling Mill	Geared	1927	National Tube Co., Lorain, O.	AC
400	350	230	DC	Tube Reeling Mill	Geared	1927	National Tube Co., Lorain, O.	AC
400	400	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co., Phillipsdale, R. I.	AC
400	300	550	25	Tube Mill	Geared	1927	Bethlehem Steel Co., Sparrows Point, Md.	GE
400	300	550	25	Tube Mill	Geared	1927	Bethlehem Steel Co., Sparrows Point, Md.	GE
400	400-800	230	DC	Cold Strip Mill	Geared	1927	Trumbull Steel Co., Warren, O.	GE
400	400-800	230	DC	Cold Strip Mill	Geared	1927	Trumbull Steel Co., Warren, O.	GE
400	400-800	230	DC	Cold Strip Mill	Geared	1927	Trumbull Steel Co., Warren, O.	GE
400	400-800	230	DC	Cold Strip Mill	Geared	1927	Central Alloy Steel Co., Massillon, O.	GE
400	400-800	230	DC	Cold Mill	Geared	1927	American Sheet & Tinplate Co., McKeesport, Pa.	GE
400	500	6600	25	Tube Sizing Mill	Geared	1927	Jones & Laughlin Steel, Woodlawn, Pa.	GE
400	600	2300	60	Tube Welding Mill	Geared	1927	South Chester Tube Co., Chester, Pa.	GE
400	720	4600	60	Copper Mills	Geared	1927	Higgins Brass & Mfg. Co., Detroit, Mich.	GE
400	720	4600	60	Copper Mills	Geared	1927	Higgins Brass & Mfg. Co., Detroit, Mich.	GE
400	514	2200	60	Cold Mill	Geared	1927	American Rolling Mill Co., Zanesville, O.	WE
400	480	440	25	Merchant Mill	Geared	1927	Bethlehem Steel Co., Lackawanna, N. Y.	CW
450	720	2200	60	Seamless Tube Mill	Geared	1927	Youngstown Sheet & Tube Co., Youngstown, O.	WE
500	400-800	230	DC	Cold Strip Mill	Geared	1927	Newton Steel Co., Newton Falls, O.	WE
500	267-800	230	DC	Merchant Mill	Geared	1927	Allegheny Steel Co., Brackenridge, Pa.	GE
500	375	2200	25	10" Aluminum Rod Mill	Geared	1926	U. S. Aluminum Co., Massena, N. Y.	GE
500	400-800	230	DC	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel, Woodlawn, Pa.	GE
500	400-800	230	DC	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel, Woodlawn, Pa.	GE
500	400-800	230	DC	14" Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co., Rome, N. Y.	GE
500	400-800	230	DC	14" Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co., Rome, N. Y.	GE
500	600	2200	60	10" Rod Mill	Geared	1927	Dilworth Porter Co., Pittsburgh, Pa.	GE
500	120	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co., Phillipsdale, R. I.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC
500	400-800	600	DC	Cold Strip Mill	Geared	1927	Weirton Steel Co., Weirton, W. Va.	AC

HP.	RPM.	Volts	Cyc.	Type of Mill	Drive	Date	Customer and Location	Mfgd. By
600	705	2200	60	10″ Rod Mill	Geared	1927	Washburn Wire Co., Phillipsdale, R. I.	AC
600	400	2300	60	10″ Rod Mill	Direct	1927	Copperweld Steel Co., Glassport, Pa.	GE
600	514	2300	60	8″ Rod Mill	Direct	1927	Copperweld Steel Co., Glassport, Pa.	GE
600-400	514-300	4150	60	10″ Merchant Mill	Rope	1927	W. Ames, & Co., Jersey City, N. J.	GE
600	900	2300	60	10″ Mill	Geared	1927	Copperweld Steel Co., Glassport, Pa.	GE
600	290	2200	25	60″ Sheet Jobbing Mill	Geared	1927	Alan-Wood Iron & Steel Co., Conshohocken, Pa.	WE
600	400-800	230	DC	Cold Strip Mill	Geared	1927	American Rolling Mill Co., Ashland, Ky.	WE
600	400-800	230	DC	Cold Strip Mill	Geared	1927	American Rolling Mill Co., Ashland, Ky.	WE
600	400-800	230	DC	Cold Strip Mill	Geared	1927	American Rolling Mill Co., Ashland, Ky.	WE
600	400-800	230	DC	Cold Strip Mill	Geared	1927	American Rolling Mill Co., Ashland, Ky.	WE
600	400-800	230	DC	Cold Strip Mill	Geared	1927	American Rolling Mill Co., Ashland, Ky.	WE
600	705	2200	60	Merchant Mill	Geared	1927	Pollak Steel Co., Cincinnati, Ohio	WE
750	190-375	245	DC	Pontoon Mill	Coupled	1927	M. W. Kellogg Co., Jersey City, N. J.	CW
750	190-375	245	DC	Pontoon Mill	Coupled	1927	M. W. Kellogg Co., Jersey City, N. J.	CW
750	375	2200	25	10″ Aluminum Rod Mill	Geared	1926	U. S. Aluminum Co., Massena, N. Y.	GE
800	175-350	600	DC	12″ Alloy Bar Mill	Direct	1927	Illinois Steel Co., S. Chicago, Ill.	GE
800	250-750	600	DC	14″ Hot Strip Mill	Direct	1927	Trumbull Steel Co., Warren, Ohio	GE
800-800-800	720-600-480	2200	60	3-High Blooming Mill	Geared	1927	Copperweld Steel Co., Glassport, Pa.	GE
800	140-510	600	DC	10″ Rod Mill	Direct	1927	American Steel & Wire Co., Worcester, Mass.	WE
800	140-510	600	DC	10″ Rod Mill	Direct	1927	American Steel & Wire Co., Worcester, Mass.	WE
800	200-600	500	DC	10″ Merchant Rod and Strip Mill	Geared	1927	Ford Motor Co., Detroit, Mich.	WE
800	443	2200	60	Hot Mill	Coupled	1927	American Brass Co.	AC
800	505	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
800	505	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
850	250-500	250	DC	10″ Rod Mill	Direct	1927	Washburn Wire Co., Phillipsdale, R. I.	WE
850	514	2200	60	14″ Merchant Mill	Geared	1927	Copperweld Steel Co., Glassport, Pa.	WE
1000	585	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
1000	40-60	270	DC	28″ Reversing Copper Mill	Direct	1927	Rome Brass & Copper Co., Rome, N. Y.	GE
1000	333	2200	50	36″ Sheet Mill	Geared	1927	Columbia Steel Co., Torrance, Calif.	GE
1000	375	2200	25	54″ Plate Mill	Geared	1927	Alan Wood Iron & Steel Co., Conshohocken, Pa.	GE
1200-1200-865	277-200-340	2200	60	11″ Merchant Mill	Geared	1927	Bourne Fuller Co., Cleveland, O.	GE
1200	705	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
1250	300-550	500	DC	10″ Merchant Mill	Direct	1927	Ford Motor Co., Detroit, Mich.	WE
1500	65-225	750	DC	48″ Reversing Structural Mill	Direct	1927	Bethlehem Steel Co., Lackawanna, N. Y.	GE
1500	32-½	6600	25	Tube Mill	Direct	1927	National Tube Co., Lorain, O.	AC
1500	65-225	750	DC	48″ Reversing Structural Mill	Direct	1926	Bethlehem Steel Co., Lackawanna, N. Y.	GE
1500	375	6600	25	Tube Rolling Mill	Geared	1927	Jones & Laughlin Steel Co., Woodlawn, Pa.	GE
1750-1750-1140	485-360-235	2200	60	16″/14″ Merchant Mill	Geared	1927	Bourne Fuller Co., Cleveland, O.	GE
1800-1350	300	2200	60	Tube Rolling Mill	Geared	1927	National Tube Co., Ellwood City, Pa.	GE
2000	300	2200	60	Sheet Mill	Geared	1926	Amer. Sheet & Tinplate, Scottdale, Pa.	GE
2000	500-300	2200	50	22″ Merchant Mill	Geared	1927	Columbia Steel Corp., Torrance, Calif.	GE
2000	137-½-275	500	DC	10″ Merchant Rod and Strip Mill	Direct	1927	Ford Motor Co., Detroit, Mich.	WE
2000	230-460	600	DC	10″ Rod Mill	Geared	1927	American Steel & Wire Co., Worcester, Mass.	WE
2000	300-500	600	DC	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
2000	300-500	600	DC	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
2000	300-500	600	DC	Bar Plate Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
3000	65-130	600	DC	30″ Reversing Bar Mill	Direct	1927	National Tube Co., Lorain, O.	WE
3000	65-130	650	DC	30″ Reversing Bar Mill	Direct	1927	Jones & Laughlin Steel Co., Woodlawn, Pa.	WE
3000	180-360	600	DC	Hot Strip Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
3000	180-360	600	DC	Hot Strip Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
3000	180-360	600	DC	Hot Strip Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
3000	170-360	600	DC	Hot Strip Mill	Geared	1927	American Rolling Mill Co., Middletown, O.	WE
3000	250	6600	25	Piercing Mill	Geared	1927	National Tube Co., Lorain, Ohio	AC
3000	250	6600	25	Piercing Mill	Geared	1927	National Tube Co., Lorain, Ohio	AC
3000	70-175	750	DC	24″ Bar Mill	Direct	1927	Inland Steel Co., Indiana Harbor, Ind.	GE
3000	250	6600	25	Piercing Mill	Geared	1927	Jones & Laughlin Steel, Woodlawn, Pa.	GE
3000	250	6600	25	Piercing Mill	Geared	1927	Jones & Laughlin Steel, Woodlawn, Pa.	GE
3750	50-130	700	DC	Blooming Mill	Direct	1927	Central Alloy Steel Co., Massillon, O.	AC
4000	450	2200	60	24″ Continuous Billet Mill	Geared	1927	Carnegie Steel Co., Farrell, Pa.	WE
4500	450	2200	60	152″ Plate Mill	Geared	1926	Bethlehem Steel Co., Coatesville, Pa.	GE
5000	50-120	900	DC	36″ Roughing Mill	Direct	1927	Bethlehem Steel Co., Lackawanna, N. Y.	GE
5000	100	2200	60	19″ Continuous Sheet Bar Mill	Direct	1927	Continental Steel Corp., Kokomo, Ind.	GE
5000	240	2200	60	51″ Piercing Mill	Direct	1927	Standard Seamless Tube Co., Economy, Pa.	GE
6000	294	2200	60	Billett Mill	Geared	1927	Interstate Iron & Steel Co., Chicago, Ill.	AC
6500	60-140	700	DC	35″ Reversing Blooming Mill	Direct	1927	Illinois Steel Co., So. Chicago, Ill.	WE
7000	40-80	750	DC	54″ Reversing Blooming Mill	Direct	1926	Bethlehem Steel Co., Lackawanna, N. Y.	GE
7000	65-100	750	DC	48″ Reversing Structural Mill	Direct	1926	Bethlehem Steel Co., Lackawanna, N. Y.	GE
7000	65-100	750	DC	48″ Reversing Structural Mill	Direct	1926	Bethlehem Steel Co., Lackawanna, N. Y.	GE

Electricity's Contribution To The Iron & Steel Industry

Main Roll Drives in the United States and Canada

With this issue of the Iron and Steel Engineer we are again publishing a tabulated list of main roll drives installed in the Iron and Steel Industry as of December 31st, 1927.

In the past this information has been published in cataloged forms by the different manufacturing companies, each catalog including only those installations involving their own equipment. It has always been difficult for the electrical engineer in the steel industry to properly analyze the information included in these various publications because of the wide differences in the method of tabulation used by the various manufacturers.

In this tabulation the Iron and Steel Engineer is presenting the information in a uniform manner showing the Horse Power, R.P.M., Voltage, Cycles, Type and Size of mill, Method of drive, date of purchase, name of plant and location. Also a classified list which gives the types of installations in Blooming Mills, Plate Mills, Rail and Structural Mills, Bar and Billet Mills, Sheet Bar and Skelp Mills, Sheet and Tin Plate Plants, Rod Mills, Piercing Mills, Tube Mills, Strip and Hoop Mills, Merchant Mills, Wire Mills, Wheel Mills, Aluminum Brass, Copper and Non-Ferrous Mills; also the Multi-Speed Drives, A.C. Speed sets, Direct Current Adjustable Speed Drives and Reversing Blooming Mill Drives are tabulated.

This data has been prepared with the view of providing the Executives, and Engineers in the Iron and Steel Industry an authority, and a reference manual for their guidance in future installations and extensions.

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	175–300	230	d.c.	Tube Mill	Direct	1927	Babcock & Wilcox.	Beaver Falls, Pa.	W
2	300	175–300	230	d.c.	Tube Mill	Direct	1927	Babcock & Wilcox.	Beaver Falls, Pa.	W
3	300	175–225	600	d.c.	10″ Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
4	300–300	187.5–112.5	2200	25	12″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
5	300	225–300	230	d.c.	Merchant (Finishing) Mil	Direct	1916	Pacific Coast Steel Co.	Seattle, Wash.	W
6	300	250	440	25	Sheet Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N. Y.	GE
7	300	250	440	25	Cogging Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N .Y.	GE
8	300	257	2200	60	Roll		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
9	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
10	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
11	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
12	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
13	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
14	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
15	300	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
16	300	300	230	d.c.	Cold Rolling Mill	Geared	1914	Trumbull Steel Co.	Warren, Ohio	W
17	300–300	300–180	2200	25	10″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
18	300	300	2200	60	Piercing Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
19	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
20	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
21	300	200–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
22	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
23	300	300	230	d.c.	Cold Rolling Mill	Geared	1920	Alan Wood Iron & Steel Co.	Conshohocken, Pa.	W
24	300	300	2200	60	26″ Cold Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
25	300	300	2200	60	Piercing Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
26	300	300	2200	60	Roll		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
27	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
28	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
29	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
30	300	300–650	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
31	300	300–650	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
32	300–300	315–630	230	d.c.	8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
33	300	325–650	220	d.c.	Sheet Mill		1919	Aluminum Co. of America	New Kensington, Pa	AC
34	300–225–165	335–225–165	6600	25	12″ Hot Strip Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
35	300	340	2200	60	Cold Rolling Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
36	300	345–500	500	d.c.	Tube Rolling Mill	Geared	1912	Pittsburgh Steel Prod. Co.	Monessen, Pa.	W
37	300	350	2200	60	Seamless Tube Mill	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
38	300	350	2200	60	Cold Rolling Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
39	300	350	2200	60	Tube Rolling Mill	Geared	1919	Timken Roller Bearing Co.	Canton, Ohio	W
40	300	350–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
41	300	350–500	230	d.c.	Merchant Mill	Coupled	1915	Buffalo Bolt Co.	N. Tonawanda, N. Y.	CW
42	300	352	2200	60	Cold Roll Mill	Direct	1923	Sharon Steel Hoop Co.	Youngstown, Ohio	W
43	300	353	2200	60	Cold Rolls	Geared	1923	Reeves Mfg. Co.	Dover, Ohio	AC
44	300	360	2200	60	Sheet Mill—Cold Rolls	Geared	1922	U. Alloy Steel Corp., Berger Div.	Canton, Ohio	GE
45	300	360	2300	60	Cold Rolls	Geared	1923	Ashtabula Steel Co.	Ashtabula, Ohio	GE
46	300	360	2200	60	10″ Strip Mill	Coupled	1923	Pittsburgh Steel Co	Glassport, Pa.	CW
47	300	363	220	25	Cold Rolling Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
48	300	365	2200	25	8″ Merchant Mill	Direct	1909	Bethlehem Steel Co.	Johnstown, Pa.	W
49	300	375	2200	25	Wire Mill	Geared	1910	Bethelhem Steel Co.	Johnstown, Pa.	GE
50	300	375	2200	25	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
51	300	375	2200	25	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
52	300	375	2200	25	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
53	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
54	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
55	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
56	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
57	300	375	2200	25	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
58	300	375	2200	25	10″ Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
59	300	375	2200	25		Rope		Bethlehem Steel Co.	Johnstown, Pa.	AC
60	300	375	2200	25		Rope		Bethlehem Steel Co.	Johnstown, Pa.	AC
61	300	375	2200	25	Bar Mill	Coupled		Bethlehem Steel Co.	Johnstown, Pa.	AC
62	300	375	2200	25	10″ Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
63	300	375	2200	25	10″ Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
64	300	400-800	550	60	14" Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
65	300-300	400-800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
66	300-300	400-800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
67	300-300	400	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
68	300-300	400-800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
69	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
70	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
71	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
72	300-300	400-800	230	d.c.	20" x 24" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
73	300	400-800	230	d.c.	Edging Rolls	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
74	300-400	400-800	230	d.c.	14"-4-High Tandem copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
75	300	435	2200	60	18" Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
76	300	435	2200	60	24" x 48" Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
77	300	435	230	d.c.	12" Pipe Mill	Coupled	1910	A. M. Byers Co.	Pittsburgh, Pa.	CW
78	300	435	230	d.c.	12" Pipe Mill	Coupled	1910	A. M. Byers Co.	Pittsburgh, Pa.	CW
79	300	440	2200	60	Roughing Mill	Coupled	1919	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
80	300	440	2200	60	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
81	300	440	2200	60	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
82	300	450	440	60	Wire Mill	Geared	1914	American Steel & Wire Co	Joliet, Ill.	AC
83	300	450	440	60	Wire Mill		1914	American Steel & Wire Co.	Joliet, Ill.	AC
84	300	450-750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
85	300	450-750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
86	300	450	230	d.c.	Merchant Bar Mill	Geared	1916	Carbon Steel Co.	Pittsburgh, Pa.	W
87	300	450	2200	60	8" Merchant Mill		1917	Columbia Steel Corp.	Los Angeles, Cal.	GE
88	300	450	550	60	Bar Mill	Coupled	1921	National Conduit & Cable Co.	Hast. on Hudson, N.Y	AC
89	300	450	220	30	Lap Welding Rolls	Geared	1923	Spang Chalfant Co.	Etna, Pa.	GE
90	300	450	2200	60	Cross Rolls in Tube Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
91	300	450	2200	60	Cross Rolls in Tube Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
92	300	485	2200	25	Cold Rolling Mill	Direct	1916	Halcomb Steel Co.	Syracuse, N. Y	W
93	300-300	500-300	2200	25	9" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
94	300-300	500-300	2200	25	8" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
95	300	500	220	25	Tube Mill	Geared	1915	Republic Iron & Steel Co.	Youngstown, Ohio	GE
96	300	500	2080	25	9" Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
97	300	500	550	25	Tube Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
98	300	500	230	d.c.	Welding Rolls, pipe mill	Geared	1925	Central Tube Co.	Economy, Pa.	GE
99	300	500	550	25	Tube Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
100	300	500	220	25		Geared	1917	Republic Iron & Steel Co.	Youngstown, Ohio	GE
101	300	500		60	Brass Mill	Coupled	1917	British American Metals Co.	Plainfield, N. J.	CW
102	300	505	2200	60	20" Sheet Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
103	300	505	2200	60	20" Sheet Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
104	300	514	440	60	Tube Mill	Geared	1914	Detroit Seamless Tube Co.	Detroit, Mich.	GE
105	300	514	220	60	Tube Mill	Geared	1914	Detroit Seamless Tube Co.	Detroit, Mich.	GE
106	300	514	440	60	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
107	300	514	2200	60	Bar Mill	Geared	1915	C. G. Hussey	Pittsburgh, Pa.	AC
108	300	514	220	60	Tube Mill	Geared	1918	Detroit Seamless Tube Co.	Detroit, Mich.	AC
109	300	514	550	60	Brass Sheet Mill	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
110	300	514	550	60	14" Cold Strip Mill	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
111	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
112	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
113	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
114	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
115	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
116	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
117	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
118	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
119	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
120	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
121	300	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
122	300	575	2200	60	Rod Mill	Geared	1922	Standard Underground Cable Co.	Perth Amboy, N. J.	W
123	300	585	440	60	18" Copper Mill	Chain	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
124	300-150	590-292	2200	60	9" Merchant (Fin.) Mill	Geared	1920	Cleveland Hardware Co.	Cleveland, Ohio	W
125	300	600	2200	60	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
126	300	600	2200	60	14" Mill		1915	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
127	300	600	2200	60	18" Mill		1915	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
128	300-300-150	600-400-300	440	60	Bar Mill	Chain	1916	Vulcan Crucible Steel Co.	Aliquippa, Pa.	GE
129	300	600	2300	60	12" Billet Mill	Geared	1916	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
130	300	600	2200	60	Merchant Mill	Geared	1916	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
131	300	600	2300	60	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
132	300	600	440	60	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
133	300	600	2200	60	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
134	300	600	440	60	Brass Mill		1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
135	300	600	440	60			1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
135	300	600	440	60			1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
137	300	600	2200	60	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
138	300	600	2200	60	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
139	300	600	2200	60	Cold Sheet Mill Rolls	Geared	1923	Falcon Steel Co.	Niles, Ohio	GE
140	300	600	550	60		Geared		National Conduit & Cable Co.	Hast. on Hudson, N.Y	AC
141	300	600	550	60		Geared		National Conduit & Cable Co.	Hast. on Hudson, N.Y	AC
142	300	600	440	60	Copper Strip Mill	Geared	1925	Detroit Copper & Brass Co.	Detroit, Mich.	CW
143	300	720	440	60	14" Merchant Mill	Geared	1913	Union Rolling Mills Co.	Cleveland, Ohio	GE
144	300	720	2200	60	Wire Rod Mill	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
145	300	720	440	60	12" Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
146	300	720	440	60	Bar Mill	Geared	1920	Hoskins Mfg. Co.	Detroit, Mich.	AC
147	300	720	4150	60	Piercing Mill	Geared	1927	Public Service Prod. Co.	Plainfield, N. J.	GE
148	300	750	3000	50	Merchant Mill	Geared	1923	Cons. Rolling Mills Co.	Mexico City, Mex.	GE
149	300	750	2200	25	10" Bar Mill	Geared	1923	Bethlehem Steel Co.	Lebanon, Pa.	GE
150	300-200	920-360	220	d.c.	Merchant Mill	Direct	1919	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
151	320	400-800	230	d.c.	Cold Strip Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
152	325	360	2200	60	Bar Mill	Geared	1915	Heppenstall Forge & Knife Co.	Pittsburgh, Pa.	GE
153	325	600	2300	60	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
154	340	85	230	d.c.	Welding Rolls	Coupled	1906	National Tube Co.	McKeesport, Pa.	CW
155	350	125	6600	25	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
156	350	145	2200	60	Cold Rolling Mill	Rope	1912	Central Steel Co.	Massillon, Ohio	W
157	350-350	150-100	6600	25	12" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
158	350	200-300	250	d.c.	9" Merchant Mill	Direct	1919	National Farming Mach. Co., Ltd	Montmagny, P. Q.	W
159	350-350	240-480	240	d.c.	10" Merchant Mill	Direct	1923	LaClede Steel Co.	St. Louis, Mo.	GE
160	350	242	2200	25	Cold Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
161	350	250	2200	25	10" Rod Mill	Direct	1911	Dillworth Porter Co.	Pittsburgh, Pa.	GE
162	350	250	440	25	Brass Mill	Geared	1921	Harrison Radiator Corp.	Lockport, N. Y.	GE
163	350	250-325	230	d.c.	9" Merchant Mill	Direct	1921	Wayne Steel Co.	Erie, Pa.	W
164	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
165	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
166	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Kenosha, Wis.	GE
167	350-350	275-470	375	d.c.	Reversing Copper Mill	Geared	1922	Taunton-New Bedford Copper Co.	Taunton, Mass.	GE
168	350-235	300-200	6600	25	Merchant Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
169	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
170	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
171	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
172	350	300	230	d.c.	Wire Draw Bench	Coupled	1911	Pittsburgh Steel Co.	Monessen, Pa.	CW
173	350	345	440	60	Sheet Mill	Geared	1917	Universal Steel Co.	Bridgeville, Pa.	W
174	350	320	2200	60	21″ Plate (Cold Roll.) Mill	Geared	1910	Oliver Iron & Steel Co.	Wilson Station, Pa.	W
175	350	350	2200	60	Seamless Tube Mill	Geared	1927	Timken Roller Bearing Co.	Canton, Ohio	W
176	350–350	360–240	240	d.c.	10″ Merchant Mill	Direct	1911	LaClede Steel Co.	St. Louis, Mo.	GE
177	350	360	2200	60	Sheet Mill—Cold Rolls	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
178	350–350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
179	350–350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
180	350–350	360–240	440	60	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
181	350–350	375–214	6600	25	9″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
182	350	400	2200	60	Wire Rod Mill	Geared	1918	Taunton-New Bedford Copper Co.	New Bedford, Mass.	AC
183	350	400	2200	60	Wire Rod Mill	Coupled	1918	Taunton-New Bedford Copper Co.	New Bedford, Mass.	AC
184	350	400	2200	60	Wire Rod Mill	Coupled	1918	Taunton-New Bedford Copper Co.	New Bedford, Mass.	AC
185	350	400–600	230	d.c.	Hot Mill	Geared	1913	Bethleh. m Steel Co.	Lackawanna, N. Y.	CW
186	350	420	2200	50	Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
187	350	435	2200	60	Pipe Welding Rolls	Geared	1919	Wheeling Steel Corporation	Steubenville, Oh o	W
188	350	450–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
189	350	480	2200	25	12″ Roughing Mill	Geared	1923	Halcomb Steel Co.	Syracuse, N. Y.	W
190	350	485	2200	25	Cont. Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	AC
191	350	485	2200	25	Cont. Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	AC
192	350	490	6400	25	24″ Flat Edging Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
193	350	490	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
194	350	490	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
195	350	500	230	d.c.	16″ Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
196	350	524–850	230	d.c.	18″ Blading Mill	Geared	1924	W. E. & M. Co.	South Phila. Works	W
197	350	580	2200	60	Merchant Mill	Geared	1916	Copper Clad Steel Co.	Pittsburgh, Pa.	W
198	350	590	2200	60	12″ Merchant Mill	Geared	1918	Indianapolis & Eastern TractionCo.	Indianapolis, Ind.	W
199	350	600	2200	60	Bar Mill	Belted	1920	Joslyn Mfg. Co.	Chicago, Ill.	AC
200	350	700	2200	60	Merchant Mill	Geared	1918	Kilby Car & Foundry Co.	Anniston, Ala.	W
201	360	300–425	230	d.c.	8″ Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
202	360	300–600	230	d.c.	Rod Mill	Direct	1922	United Alloy Steel Corporation	Canton, Ohio	W
203	360	350–500	230	d.c.	7″ Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
204	375	430–860	230	d.c.	20″ Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
205	375	430–860	230	d.c.	20″ Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
206	375	430–860	230	d.c.	20″ Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
207	375	430–860	230	d.c.	20″ Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
208	375	430–860	230	d.c.	20″ Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
209	375	430–860	230	d.c	Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
210	375	430–860	230	d.c.	Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
211	400	75		d.c.	Welding Rolls	Coupled	1906	National Tube Co.	McKeesport, Pa.	CW
212	400–400	107– 64	2200	25	16″ Bar Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
213	400	125	230	d.c.	12″ Structural Mill	Direct	1919	Eastern Steel Co.	Pottsville, Pa.	W
214	400	200–300	230	d.c.	9″ Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
215	400	210–350	230	d.c.	Merchant Mill		1915	Buffalo Bolt Co.	No. Tonawanda, N. Y	CW
216	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
217	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
218	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
219	400	240–721	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
220	400–400	250–500	230	d.c.	10″ Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
221	400–400	275–500	550	d.c.	12″ Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
222	400	277	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC
223	400	290	2200	60	Cold Rolling Mill	Geared	1916	Youngstown Sheet & Tube Co.	Warren, Ohio	W
224	400	290	2200	60	Cold Rolling Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
225	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
226	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
227	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
228	400	300	2200	25	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
229	400	300	2200	25		Geared	1918	Pittsburgh Steel Co.	Monessen, Pa.	AC
230	400	300	440	60			1918	Witherow Steel Co.	Neville Island, Pa.	AC
231	400	300	550	25	Tube Mill	Geared	1927	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
232	400	300	550	25	Tube Mill	Geared	1927	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
233	400	350	230	d.c.	Tube Reeling Drive	Geared	1927	National Tube Co.	Lorain, Ohio	AC
234	400	350	230	d.c.	Tube Reeling Drive	Geared	1927	National Tube Co.	Lorain, Ohio	AC
235	400	350	440	60	9″ Copper Finishing Mill	Direct	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
236	400	352	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
237	400	360	2200	60	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
238	400	360	2200	60	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
239	400	360	2200	60	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
240	400	360	2200	60	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
241	400	360	2200	60	Cold Roll Sheet Mill	Geared	1918	Reeves Mfg. Co.	Canal Dover, Ohio	GE
242	400	360	2200	60	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
243	400	360	2200	60	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
244	400	360	440	60	Cold Strip Mill	Geared	1921	American Tube and Stamping Co.	Bridgeport, Conn.	GE
245	400	360	440	60			1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
246	400	360	2200	60	8″ Strip Mill	Coupled	1923	Pittsburgh Steel Co.	Glassport, Pa.	CW
247	400	360	2300	60	Sheet Mill, Cold Rolls	Geared	1925	Thomas Sheet Steel Co.	Niles, Ohio	GE
248	400	375	220	25	20″ Tube Mill, Wld. Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
249	400	375	220	25	Tube Mill, Chill Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
250	400	375	2200	25	Wire Drawing Bench	Rope	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
251	400	375	2200	25	Wire Drawing Bench	Rope	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
252	400	375	220	25	Tube Mill, Wld. Rolls	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
253	400	375	220	25	Tube Mill, Wld. Rolls	Geared	1912	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
254	400	375	220	25	Tube Mill, Wld. Rolls	Geared	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
255	400	385	550	40	22″ Puddle Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
256	400	400–450	220	d.c.	8″ Merchant Mill	Direct	1911	Illinois Steel Co.	Milwaukee, Wis.	W
257	400	400	400	60	Bar Mill	Chain	1918	Latrobe Steel Co.	Latrobe, Pa.	AC
258	400	400	440	60	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
259	400	400	440	60	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
260	400	400–800	230	d.c.	Cold Strip Mill	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
261	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
262	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
263	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
264	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Central Alloy Steel Co.	Massillon, Ohio	GE
265	400	400–800	230	d.c.	Cold Mill	Geared	1927	American Sheet & Tinplate Co.	McKeesport, Pa.	GE
266	400	400	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC
267	400	435	2200	60	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa	W
268	400	435	2200	60	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa.	W
269	400	435	440	60	Pipe Mill	Geared	1918	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
270	400	435	2200	60	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Edgewater, N. J.	W
271	400	440	2200	60	Copper Rod Mill	Geared	1922	American Brass Company	Kenosha, Wis	W
272	400	440	4000	60	Billet Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
273	400	450	2200	60	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
274	400	450	2200	60	Bar Mill	Geared	1917	Standard Seamless Tube Co.	Economy, Pa.	AC
275	400	450	550	60		Geared	1918	Pressed Steel Car Co.	McKees Rocks, Pa.	AC
276	400	450	2200	60	Wire Drawing Bench	Geared	1919	Gulf States Steel Co.	Birmingham, Ala.	GE
277	400	450	2200	60	Wire Drawing Bench	Geared	1919	Gulf States Steel Co.	Birmingham, Ala.	GE
278	400	450	440	60	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
279	400	450	440	60			1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
280	400	450	440	60	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
281	400	450	440	60	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
282	400	450	2200	60	9″ Bar Mill	Geared	1924	Atchison, Topeka & S. F. Ry. Co	Chicago, Ill.	AC

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
283	400	450	2200	60	12" Bar Mill	Geared	1924	Atchison, Topeka & S. F. Ry. Co	Chicago, Ill.	AC
284	400	480	440	25	Merchant Mill	Geared	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	CW
285	400	485	440	25	9" Merchant Mill	Geared	1916	Hess Steel Corporation	Baltimore, Md.	W
286	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
287	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
288	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
289	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
290	400	500	6600	25	Tube Sizing Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
291	400	514	2200	60			1918	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
292	400	514	2200	60	Brass Tubes	Geared	1915	American Brass Company	Waterbury, Conn.	GE
293	400	514	2200	60	Brass Tubes	Geared	1915	American Brass Company	Waterbury, Conn.	GE
294	400	514	2200	60	24" Roughing Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
295	400	514	2200	60	20" Flat Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
296	400	514	2200	60	18" Bar Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
297	400	514	440	60	16" Copper Bar Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
298	400	514	2200	60	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
299	400	514	2200	60	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
300	400	514	6600	60			1924	Weirton Steel Co.	Weirton, W. Va.	AC
301	400	514	6600	60			1924	Weirton Steel Co.	Weirton, W. Va.	AC
302	400	514	2200	60	Cold Mill	Geared	1927	American Rolling Mill	Zanesville, Ohio	W
303	400	514	4000	60	Rail Splitter	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
304	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
305	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
306	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
307	400	575	2200	60	Cold Rolling Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
308	400	575	440	60	Sheet Cop. Rolling Mill	Geared	1923	American Metal Products Co.	Milwaukee, Wis.	W
309	400	585	4000	60	14" Merchant Mill	Geared	1922	Calumet Steel Co.	Chicago, Ill.	W
310	400–225	600–300	550	40	Bar Mill	Geared	1909	Ludlum Steel Co.	Watervliet, N. Y.	GE
311	400	600	440	60	Piercing Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
312	400	600	440	60	Billet Piercing Machine	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
313	400	600	440	60	Brass Mill	Geared	1917	Rome Brass & Copper Co.	Rome, N. Y.	GE
314	400	600	2200	60	Wire Rod Mill	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
315	400	600	440	60	Wire Mill	Coupled	1917	Rome Wire Co.	Rome, N. Y.	AC
316	400	600	440	60	12" Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
317	400	600	440	60	Tube Mill	Geared	1920	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
318	400	600	2200	60	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
319	400	600	550	60		Geared	1912	National Conduit & Cable Co.	Hast.on Hudson,N.Y	AC
320	400	600	2200	60	Zinc Mill	Geared	1922	Ball Brothers Glass Co.	Muncie, Ind.	GE
321	400	600	220	60		Coupled	1918	Consumers Steel Co.	Chicago, Ill.	AC
322	400	600	2200	60	2-Roughing Stands—Brass Rolling Mills	Geared	1925	American Brass Co.	Torrington, Conn.	GE
323	400	600	2300	60	Tube Welding Mill	Geared	1927	South Chester Tube Co.	Chester, Pa.	GE
324	400	705	2200	60	16" Cogging Mill	Geared	1923	Crucible Steel Co. of America Park Works	Pittsburgh, Pa.	W
325	400	720–450	2200	60	Bar Mill	Geared	1917	Cyclops Steel Co.	Titusville, Pa.	AC
326	400	720	2200	60	Copper Mill	Geared	1920	Rome Wire Co.	Rome, N. Y.	GE
327	400	720	550	60	Copper Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
328	400	720	4600	60	Copper Mills	Geared	1927	Higgins Brass & Mfg. Co.	Detroit, Mich.	GE
329	400	720	4600	60	Copper Mills	Geared	1927	Higgins Brass & Mfg. Co.	Detroit, Mich.	GE
330	400	750	4400	25	Rail Splitter	Geared	1925	Buffalo Steel Co.	Tonawanda, N. Y.	GE
331	400–200	800–400	230	d.c.	Copper Sheet Mill	Geared	1925	Rome Brass & Copper Co.	Rome, N. Y.	GE
332	400–265	875–585	2200	60	Bar Mill	Geared	1913	Old Dominion Iron & Nail Co.	Richmond, Va.	W
333	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
334	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
335	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
336	400	900	550	60	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
337	400	900	2200	60	Bar and Billet Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	W
338	400	900	550	60	Brass Mill	Geared	1921	American Brass Company	Ansonia, Conn.	GE
339	450	125	6600	25	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
340	450	200–400	230	d.c.	Zinc Sheet Mill, 26" x 72'	Geared	1924	Illinois Zinc Co.	Peru, Illinois	W
341	450	211–422	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
342	450	211–422	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
343	450	300	2200	60			1920	Pittsburgh Steel Prod. Co.	Allenport, Pa.	AC
344	450	300	2200	60			1920	Pittsburgh Steel Prod. Co.	Allenport, Pa.	AC
345	450	300	230	d.c.	10" Tube Mill	Coupled	1911	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
346	450	354–230	2200	60	8" Merchant Mill	Direct	1919	Bourne-Fuller Co.	Cleveland, Ohio	W
347	450	375	440	25	Cold Roll	Geared	1925	Seneca Iron & Steel Co.	Blasdell, N. Y.	CW
348	450	400-650	230	d.c.	Rod (1 Stand) No. 2 Mill	Direct	1913	American Steel & Wire Co.	Worcester, Mass.	W
349	450	440	2200	60	Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
350	450	440–350	2220	60	Cont. Hoop (Finishing)	Direct	1920	Conners Steel Co.	Birmingham, Ala.	W
351	450	450–600	230	d.c.	12" Cold Strip Mill	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
352	450	450–600	230	d.c.	12" Cold Strip Mill	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
353	450	450	2080	60	18" Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
354	450	450	2080	60	12" Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
355	450	500	440	60	Brass Rolling Mill	Geared	1918	Michigan Copper & Brass Co.	Detroit, Mich.	W
356	450	514	550	60	14" Cold Strip Mill	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
357	450	550–750	230	d.c.	Zinc Rolls	Coupled	1924	Mattheisen & Hegeler Zinc Co.	LaSalle, Ill.	CW
358	450	550–750	230	d.c.	Zinc Strip Mills	Geared	1925	Mattheisen & Hegeler Zinc Co.	LaSalle, Ill.	CW
359	450	585	2200	50	14" Merchant Mill	Geared	1918	Columbia Steel Co.	Los Angeles, Cal.	W
360	450	600	550	60	Copper Rod Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
361	450	700–595	2200	60	Cont. Hoop (Finishing)	Direct	1921	Conners Steel Co.	Birmingham, Ala.	W
362	450	720	2200	60	Piercing Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
363	450	720	2200	60	Seamless Tube	Geared	1927	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
364	450	730–490	4000	25	10" Merchant Mill	Geared	1917	Atlas Steel Corporation	Dunkirk, N. Y.	W
365	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
366	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
367	450	870	440	60	Copper Clad Mill	Geared	1915	Duplex Metal Co.	Philadelphia, Pa.	W
368	450–360	870–695	2200	60	10" Merchant Mill	Geared	1914	Cleveland Hardware Co.	Cleveland, Ohio	W
369	450–360	875–700	2200	60	9" Merchant Mill	Geared	1915	National Lock Washer Co.	Riverside, N. J.	W
370	475–350	240–181	440	25	10" Merchant Mill	Direct	1914	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
371	485–360	870–695	2200	60	10" Merchant Mill	Geared	1915	Old Dominion Iron & Nail Co.	Richmond, Va.	W
372	500	0–200	500	d.c.	78" Reversing Brass Plate	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
373	500	88	6600	25	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
374	500	120	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC
375	500–385–250	130–100–65	440	25	14" Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
376	500	130–310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
377	500	150–225	250	d.c.	12" Merchant Mill	Direct	1919	National Farming Mach. Co., Ltd.	Montmagny, P. Q.	W
378	500	150–550	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
379	500	155–500	250	d.c.	Tyre Mill	Direct	1923	McConway Torley Co.	Pittsburgh, Pa.	W
380	500	175–350	250	d.c.	12" Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
381	500	175–350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
382	500	175–350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
383	500	175–350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
384	500	180–360	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Corp.	Benwood, W. Va.	GE
385	500	184	2200	25	12" Merchant Mill	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
386	500	184	2200	25	16" Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
387	500	190	230	d.c.	18" Tandem Rough. Mill	Rope	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
388	500	190	230	d.c.	24" Blooming Mill	Geared	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
389	500	200–400	250	d.c.	10" Cont. Mill	Coupled	1925	Republic Iron & Steel Co.	Youngstown, Ohio	AC
390	500	214	6600	25	Axle Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	GE
391	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
392	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
393	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
394	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
395	500	220-400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
396	500	234	2200	60	Tube Mills	Coupled	1922	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
397	500-330	242-161	440	25	16" and 10" Merchant Mill	Direct & Rope	1913	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
398	500	244	2200	25	10" Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
399	500-500	250-325	230	d.c.	8" Hoop Mill	Direct	1909	Atlantic Steel Co.	Atlanta, Ga.	GE
400	500	250-500	230	d.c.	9" Hoop Mill Finishing	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
401	500	250	440	25	10" Bar Mill	Geared	1917	Simonds Manufacturing Co.	Lockport, N. Y.	GE
402	500	250	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
403	500	250	2200	60	Tube Mill	Geared	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
404	500	250	6600	25	Sheet Mill Cold Rolls	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
405	500	250-350	600	d.c.	9" Merchant Mill	Direct	1921	Missouri Rolling Mill Co.	St. Louis ,Mo.	W
406	500	250-600	250	d.c.	12-9" Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
407	500	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
408	500	267-800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
409	500	267-800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
410	500	267-800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
411	500	267-800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
412	500	267-800	230	d.c.	Merchant Mill	Geared	1927	Allegheny Steel Co.	Brackenridge, Pa.	GE
413	500	290	4000	60	8" Merchant Mill	Direct	1920	Calumet Steel Co.	Cicago, Ill.	W
414	500	290	2200	25	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
415	500	300	2200	60	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
416	500	300	2200	60	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
417	500	300	2200	60	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
418	500	300	2200	60	Squeezer	Geared	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
419	500	300	2200	60	Bar Mill	Coupled	1920	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
420	500	300-450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
421	500	320	2200	60	12" Merchant Mill	Geared	1919	Baltimore & Ohio Railroad	Cumberland, Md.	W
422	500-500	327-200	440	60	9" Merchant Mill	Direct	1913	Bourne-Fuller Co.	Cleveland, Ohio	GE
423	500	350	2200	60	Cold Rolling Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
424	500	350	440	60	Cold Rolling Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
425	500	360	2200	25	8" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Johnstown, Pa.	W
426	500	360	2200	60	Tube Mill	Geared	1915	American Brass Company	Waterbury, Conn.	GE
427	500	360	2200	60	16" Bar Mill	Geared	1915	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
428	500	360	2200	60	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
429	500	360	2200	60	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
430	500	360	2200	60	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
431	500	360	2200	60	Sheet Mill, Cold Rolls	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
432	500	360	2200	60	Billet Piercing Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
433	500	360	440	60	Brass Mill	Direct	1923	Rome Brass and Copper Co.	Rome, N. Y.	GE
434	500	360	440	60	Brass Mill	Direct	1923	Rome Brass and Copper Co.	Rome, N. Y.	GE
435	500	360-612	600	d.c.	Reversing Hot Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	GE
436	500	365	440	25	Copper Rolling Mill	Rope	1922	Baltimore Copper Smelt.& Roll.Co.	Baltimore, Md.	W
437	500	368	2200	25	Brass Mill	Geared	1920	American Brass Company	Kenosha, Wis.	W
438	500	375	2200	25	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
439	500	375	2300	25		Geared	1919	Buffalo Copper & Brass Co.	Buffalo, N. Y.	AC
440	500	375	2300	25		Geared	1925	Buffalo Copper & Brass Co.	Buffalo, N. Y.	AC
441	500	375	2200	25	10" Aluminum Rod Mill	Geared	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
442	500	400-800	230	d.c.	Cold Strip Mill	Geared	1927	Newton Steel Co.	Newton Falls, Ohio	W
443	500	400-800	230	d.c.	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
444	500	400-800	230	d.c.	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
445	500	400-800	230	d.c.	14" Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
446	500	400-800	230	d.c.	14" Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
447	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
448	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
449	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
450	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
451	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
452	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
453	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
454	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
455	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
456	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
457	500-500	400-600	230	d.c.	Hoop Mill	Geared	1920	Atlantic Steel Co.	Atlanta, Ga.	GE
458	500	435	440	60	8" Merchant Mill	Rope	1911	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
459	500	435	440	60	8" Merchant Mill	Rope	1912	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
460	500	435	440	60	8" Merchant Mill	Rope	1912	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
461	500	435	440	60	9" Merchant (Fin.) Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
462	500	435	440	60	10" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
463	500	435	2200	60	Merchant Mill	Geared	1916	Seymour Manufacturing Co.	Waterbury, Conn.	W
464	500	440	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
465	500	440	2200	60	Bar Mill	Geared	1924	Universal Steel Co.	Bridgeville, Pa.	AC
466	500	440	4000	60	Bar Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
467	500	442	2200	60	Cold Rolling Mill	Geared	1922	Follansbee Bros. Co.	Toronto, Ohio	W
468	500	450	440	60	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
469	500	450	440	60	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
470	500	450	550	60	12" Cold Roll Mill	Geared	1914	Worcester Pressed Steel Co.	Worcester, Mass.	GE
471	500	450	440	60	16" Bar Mill	Geared	1914	Carbon Steel Co.	Pittsburgh, Pa.	GE
472	500	450	2200	60	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
473	500	450	2200	60	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
474	500	450	2200	60	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
475	500	450	2200	60	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
476	500	450	2200	60	Billet Mill	Geared	1915	International High Speed Steel Co.	Rockaway, N. J.	GE
477	500	450	2200	60	Sheet Mill	Geared	1915	American Brass Company	Torrington, Conn.	GE
478	500	450	2200	60	Tube Mill	Geared	1916	Ohio Seamless Tube Co.	Shelby, Ohio	GE
479	500	450	440	60	20" Copper Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
480	500	450	440	60	Wire Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
481	500	450	2300	60	Merchant Mill	Geared	1916	Pacific Coast Steel Co.	San Francisco, Cal.	GE
482	500	450	2200	60	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
483	500	450	2200	60	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
484	500	450	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
485	500	450	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
486	500	450	440	60	20" Copper Mill	Coupled	1918	Waclark Wire Co.	Bayway, N. J.	CW
487	500	450	2200	60	Tube Mill	Geared	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
488	500	450	440	60	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
489	500	450	2200	60	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
490	500	450	2200	60	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
491	500	450	2200	60	14" Roughing Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
492	500	450	2200	60	9" Finishing Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
493	500	450	2200	60	Hoop Mill	Geared	1912	Carnegie Steel Co.	Pittsburgh, Pa.	CW
494	500	450	2200	60	Bar Mill	Geared	1925	Indianapolis Steel Products Co.	Indianapolis, Ind.	AC
495	500	450	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
496	500	480-250	230	d.c.	Merchant Mill	Coupled	1923	Buffalo Bolt Co.	N. Tonawanda, N. Y.	CW
497	500	487	6600	25	8" Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
498	500	500	2300	25	Milling Machine	Direct	1914	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
499	500-500-500	500-375-265	2200	25	10" Merchant Mill	Direct & Belt	1916	Donner Steel Co.	Buffalo, N. Y.	GE
500	500	500	550	25	Tube Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
501	500	500	2300	25	18" Merchant Mill	Geared	1919	Halcomb Steel Co.	Syracuse, N. Y.	GE
502	500	500	2200	25	16" Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
503	500	500	2200	25	Continuous Tube Mill	Coupled	1915	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
504	500	500	2200	25	Experimental Alum.	Geared	1925	U. S. Aluminum Co.	Massena, N. Y.	GE
505	500	514	440	60	Bar Mill	Chain	1915	Simmons Mfg. Co.	Kenosha, Wis.	AC
506	500	514	2200	60	Bar Mill	Rope	1917	Henry Disston & Son	Philadelphia, Pa.	AC
507	500	514	550	60	18" Copper Mill	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
508	500	514	2200	60	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
509	500	514	2200	60	Bar Mill	Geared	1920	Metals Production Equipment Co.	Springfield, Mass.	AC
510	500	514	2200	60	Bar Mill	Geared	1920	Metals Production Equipment Co.	Springfield, Mass.	AC
511	500	514	2200	60	Bar Mill	Geared	1920	Metals Production Equipment Co.	Springfield, Mass.	AC
512	500	514	2200	60	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
513	500	575-865	2200	60	10" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
514	500	575-865	2200	60	10" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
515	500	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
516	300	575	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
517	500	575	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
518	500	585	2200	60	Copper Rod Mill	Geared	1922	Eugene F. Phillips Elec. Wks., Ltd.	Montreal, Que.	W
519	500	600	2200	60			1913	Cleveland Brass & Copper Co.	Cleveland, Ohio	AC
520	500	600	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
521	500	600	2200	60	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
522	500	600	2200	60	Brass Mill	Geared	1917	American Brass Company	Torrington, Conn.	GE
523	500	600	2200	60	Bar Mill	Belted	1919	Joslyn Mfg. Co.	Chicago, Ill.	AC
524	500	600	2200	60	Merchant Mill	Geared	1923	Taunton-New Bedford Copper Co.	Taunton, Mass.	GE
525	500	600	2200	60	Copper Rolling Mill	Geared	1923	American Brass Company	Torrington, Conn.	GE
526	500	600	2200	60	Reducing Pipe Mill	Geared	1925	Ohio Seamless Tube Co.	Shelby, Ohio	GE
527	500	600	2200	60	Continuous Sheet Mill	Geared	1926	American Rolling Mill Co.	Ashland, Ky.	W
528	500	600	4600	60	Reducing Mill	Geared	1926	Detroit Seamless Steel Tube Co.	Detroit, Mich.	AC
529	500	600	440	60	Aluminum Mill	Geared	1922	Aluminum Goods Mfg. Co.	Manitowoc, Wis.	GE
530	500	600	2200	60	10" Rod Mill	Geared	1927	Dilworth Porter Co.	Pittsburgh, Pa.	GE
531	500	730-485	2200	50	8" Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
532	500-250	750-375	3000	50	Merchant Mill	Geared	1923	Consolidated Rolling Mills Co.	Mexico City, Mex.	GE
533	500-400	775-585	550	40	10" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
534	500	870	2200	60	16" Merchant Mill	Geared	1919	McConway-Torley Co.	Pittsburgh, Pa.	W
535	500-400	875-700	550	60	10"-14" Merchant Mill	Geared	1916	The Texas Steel Co.	Fort Worth, Texas	W
536	500	884	2200	60	9" Rougher	Geared	1925	Crucible Steel Co.	Atha Works	W
537	500	888-540	6600	60	11" Finishing Stand	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
538	500-250	890-513 440-256	2200	60	10" Merchant Mill	Geared	1919	Hunter Crucible Steel Co.	Cleveland, Ohio	W
539	500	900	440	60	10" Merchant Mill	Geared	1925	Latrobe Elec. Steel Co.	Latrobe, Pa.	GE
540	525	125	2200	25	Merchant Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
541	525	125	2200	25	Merchant Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
542	550	120-300	250	d.c.	10" Merchant Mill	Direct	1923	Firth Sterling Steel Co.	McKeesport, Pa.	W
543	550	320-206	2200	60	10" Hoop Mill	Direct	1917	Atlantic Steel Co.	Atlanta, Ga.	W
544	550	336-588	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
545	550	420-714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
546	550	420-714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
547	550	575	2200	60	16" Skelp Mill	Geared	1919	Tyler Tube & Pipe Co.	Washington, Pa.	W
548	550-360	875-585	2200	60	12" Merchant Mill	Geared	1918	Norfolk & Western Railroad	Roanoke, Va.	W
549	550	880	2200	60	16" Merchant Mill	Geared	1919	Danville Structural Tubing Co.	Danville, Pa.	W
550	550	880	2200	60	Merchant Mill	Geared	1921	Danville Structural Tubing Co.	Danville, Pa.	W
551	575	300-214	6600	25	10" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
552	575-575	375-250	6600	25	8" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
553	600	150	550	60	Sheet Mill, Cold Rolls	Rope	1909	Weirton Steel Co.	Weirton, W. Va.	GE
554	600-600	150-250	575	d.c.	6" Hot Strip Mill	Direct	1913	American Steel & Wire Co.	Cleveland, Ohio	GE
555	600	185-470	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
556	600	200-300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
557	600	200-300	230	d.c.	9" Merchant (Fin.) Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
558	600-600	214- 93	6600	25	12" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
559	600	214	440	25			1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
560	600	214	440	25			1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
561	600-600	225-425	550	d.c.	12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
562	600	270-635	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
563	600	290	2200	25	60" Sheet Jobbing Mill	Geared	1927	AlanWood Iron & Steel Co.	Conshohocton, Pa.	W
564	600-600	300-214	2200	25	Bar Mill	Coupled & Rope	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
565	600	300-214	2200	25	Bar Mill	Chain	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
566	600	300	2200	25	Muck Mill	Chain	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
567	600	300	2200	60	Sheet Mill	Geared	1917	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
568	600	300	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
569	600	300	440	25	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
570	600	300	440	25	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
571	600	300	2200	60	Tube Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
572	600	300	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
573	600	300-330	230	d.c.	10" Bar Mill	Coupled	1921	Universal Steel Co.	Bridgeville, Pa.	CW
574	600-400-200	321-214-107	440	25	9" Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
575	600	360	2200	60	Tube Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
576	600	360	2200	60	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
577	600	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
578	600	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
579	600	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
580	600	360	440	60	Copper Mills	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
581	600	360	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
582	600	365	6600	25	10" Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
583	600	368	6600	25	18"-21" Roughing Mill	Geared	1924	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
584	600-400	375-210	2200	25	9" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
585	600	390	440	60	20" Merchant Mill	Geared	1916	Stanley Works	New Haven, Conn.	W
586	600	390	440	60	Cold Strip Mill	Geared	1917	Stanley Works	New Haven, Conn.	W
587	600	400-800	250	d.c.	18" Merchant Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
588	600	400	2300	60	10" Rod Mill	Direct	1927	Copperweld Steel Co.	Glassport, Pa.	GE
589	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
590	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
591	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
592	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
593	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
594	600	440	2200	60	10" Rod Mill	Direct	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
595	600	450	2200	60	Aluminum Strip Mill	Geared	1914	Cleveland Metal Products Co.	Cleveland, Ohio	GE
596	600-600-600	469-375-281	2200	25	8" Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
597	600	485	2200	25	10" Merchant Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
598	600	485	440	25	20" Merchant Mill	Geared	1915	Hess Steel Corporation	Baltimore, Md.	W
599	600	485	550	25	Piercing Mill	Geared	1915	Baltimore Tube Co.	Baltimore, Md.	W
600	600	490	2200	25	16" Bar Roughing Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
601	600	500	2200	60	20" Merchant Mill	Geared	1916	Carpenter Steel Co.	Reading, Pa.	W
602	600	500	2200	60	16" Merchant Mill	Geared	1917	Central Steel Co.	Massillon, Ohio	W
603	600	500	440	25	16" Merchant Mill	Geared	1919	Buffalo Bolt Co.	N.Tonawanda, N. Y.	GE
604	600	500	575	25	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
605	600	500	575	25	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
606	600-440	514-300	4150	60	10" Merchant Mill	Rope	1912	W. Ames & Co.	Jersey City, N. J.	GE
607	600	514	440	60	Aluminum Mill	Geared	1922	Aluminum Goods Mfg. Co.	Manitowoc, Wis.	GE
608	600	514	2200	60	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
609	600	514	2200	60	18" Bar Mill	Geared	1926	American Nickel Corp.	Hyde, Pa.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
610	600	514	2300	60	8" Rod Mill	Direct	1927	Copperweld Steel Co.	Glassport, Pa.	GE
611	600	585-325	550	40	15" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
612	600-500-400	600-500-400	2200	25	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
613	600-300	600-300	550	60	9" Bar Mill No. 2	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
614	600	600	4000	60	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
615	600	600	2200	60	Copper Mill	Geared	1920	American Brass Co.	Waterbury, Conn.	GE
616	600	600	440	60	16" Merchant Mill		1920	Wayne Steel Co.		AC
617	600	600	2300	60		Coupled		Fulton Steel Corp.	Fulton, N. Y.	AC
618	600	600	2200	60	Brass Mill	Geared	1921	American Brass Co.	Waterbury, Conn.	GE
619	600	600	550	60	Copper Rod Mill	Geared	1925	Phillips Wire Co.	Pawtucket, R. I.	GE
620	600	705	2200	60	Merchant Mill	Geared	1927	Pollak Steel Co.	Cincinnati, O.	W
621	600	705	2200	60	10" Rod Mill	Geared	1927	Washburn Wire Co.	Phillipisdale, R. I.	AC
622	600-600	720-360	6600	60	Hot Strip Mill	Geared	1916	Weirton Steel Co.	Weirton, W. Va.	AC
623	600	885	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
624	600	885	2200	60	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
625	600	900	440	60	Copper Rod Mill	Geared	1920	Western Elec. Co.	Hawthorne, Ill.	GE
626	600	900	550	60	Brass Mill	Geared	1920	American Brass Co.	Ansonia, Conn.	GE
627	600	900	440	60	Copper Mill	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
628	600	900	2300	60	10" Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	GE
629	650	160	440	60	14" Guide Mill	Coupled		Witherow Steel Co.	Neville Island, Pa.	AC
630	650	184	6600	25	18" Merchant Mill,	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
631	650	184	6600	25	14" Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
632	650	200	440	60	14" Guide Mill	Coupled		Witherow Steel Co.	Neville Island, Pa.	AC
633	650	210	6600	25	12" Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
634	650	225-400	600	d.c.	Seamless Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
635	650	225-400	600	d.c.	Seamless Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
636	650	225-400	600	d.c.	Seamless Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
637	650	293	2200	60	9" Merchant Mill	Rope	1919	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
638	650	500	6600	25	10" Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
639	650	500	6600	25	10" Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
640	700	86	450	d.c.	Shear Intensifier	Direct	1918	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
641	700	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
642	700	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
643	700	187	2200	25	14" Merchant Mill	Direct	1920	Donner Steel Co.	Buffalo, N. Y.	GE
644	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
645	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
646	700	210-660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
647	700	210-660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
648	700	250	2200	25	18" Bar Mill	Rope	1911	Dillworth Porter Co.	Pittsburgh, Pa.	GE
649	700	240-450	250	d.c.	9" Merchant Mill	Direct	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
650	700	295	440	60		Geared	1925	Witherow Steel Co.	Neville Island, Pa.	AC
651	700	300-400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
652	700	320	2200	60	Sheet and Jobbing Mill	Direct	1917	Carbon Steel Co.	Pittsburgh, Pa.	W
653	700	360	440	60	Brass Mill	Chain		Detroit Copper & Brass Co.	Detroit, Mich.	AC
654	700	364	2200	25	8" Merchant Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
655	700	390	2200	60	18" Bar Mill	Geared	1922	Dilworth Porter Co.	Pittsburgh, Pa.	W
656	700-600-400	400-300-200	2200	25	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
657	700-600-400	400-300-200	2200	25	Merchant Mill, No. 10	Belt	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
658	700	440	2200	60	16" Mill	Geared	1926	Connors Steel Co.	Birmingham, Ala.	AC
659	700	480-290	2200	25	12" Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
660	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
661	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
662	700	502	2200	60	Cold Rolling Mill	Direct	1919	Carnahan Tin Plate & Steel Co.	Canton, Ohio	W
663	700	585	2200	60	Copper Rod Mill	Geared	1922	Eugene F. Phillips Elec. Wks., Ltd.	Montreal, Que.	W
664	700	600	2200	60	14" Bar Mill	Coupled	1921	Universal Steel Co.	Bridgeville, Pa.	CW
665	700	730-490	4000	25	14" Merchant Mill	Geared	1918	Atlas Steel Corporation	Dunkirk, N. Y.	W
666	700	735	4000	25	14" Merchant Mill	Geared	1921	Atlas Steel Corporation	Dunkirk, N. Y.	W
667	700	735	440	25	Copper Rolling Mill	Geared	1924	Baltimore Cop.Smelt. & Rolling Co.	Baltimore, Md.	W
668	700	735	440	25	Copper Rolling Mill	Geared	1924	Baltimore Cop.Smelt. & Rolling Co.	Baltimore, Md.	W
669	700	735	440	25	Copper Rolling Mill	Geared	1924	Baltimore Cop.Smelt. & Rolling Co.	Baltimore, Md.	W
670	700	750	2200	25		Geared		Bethlehem Steel Company	Buffalo, N. Y.	AC
671	700	750	2200	25				Bethlehem Steel Company	Buffalo, N. Y.	AC
672	700	875	2200	60	Cont. Hoop (Rough). Mill	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
673	700	875	2200	60	Cont. Hoop (Intermed.)	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
674	700	880-530	2200	60	10" Finishing Mill	Geared	1923	Crucible Steel Works of America, Park Works	Pittsburgh, Pa.	W
675	720	395-825	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
676	720	480-1000	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
677	750	94	2200	25	Sheet Mill	Rope	1912	West Penn. Steel Co.	Brackenridge, Pa.	GE
678	750	100	2200	25	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
679	750	100	2200	25	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
680	750	120-210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
681	750	120-210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
682	750	125	2200	25	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
683	750	125	2200	25	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
684	750	130	550	d.c.	Wheel Mill	Direct	1915	Carnegie Steel Co.	McKees Rocks, Pa.	GE
685	750	150-250	600	d.c.	14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
686	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
687	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
688	750	160	550	d.c.	Wheel Mill	Direct	1919	Edgewater Steel Co.	Oakmont, Pa.	GE
689	750	190-375	245	d.c.	Pontoon Mill	Coupled	1927	M. W. Kellog Co.	Jersey City, N. J.	CW
690	750	190-375	245	d.c.	Pontoon Mill	Coupled	1927	M. W. Kellog Co.	Jersey City, N. J.	CW
691	750-750	225-168	440	60	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
692	750-750	235-325	230	d.c.	Piercing Mill	Geared	1914	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	GE
693	750	240	2200	60	Sheet Mill, Cold Rolls	Geared	1919	Wheeling Steel Corp.	Stuebenville, Ohio	GE
694	750	250	2200	25	Bar Mill	Geared	1914	Bethlehem Steel Co.	Johnstown, Pa.	AC
695	750	250	2200	60	Tin Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
696	750	250	440	25	Bar Mill	Coupled	1920	Simonds Mfg. Co.	Lockport, N. Y.	AC
697	750	257	2200	60	10" Strip Mill	Coupled	1923	Pittsburgh Steel Co.	Glassport, Pa.	CW
698	750	277	2200	60	18" Merchant Mill	Geared	1915	Pacific Coast Steel Co.	San Francisco, Cal.	GE
699	750	295	6600	25	Seamless Mill	Geared	1923	Gary Tube Company	Gary, Ind.	W
700	750	300-600	230	d.c.	Cold Rolling Mill	Geared	1924	International Nickel Co.	Huntington, W. Va.	AC
701	750	300-600	230	d.c.	Bliss Cold Roll Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
702	750	353	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
703	750	353	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
704	750	353	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
705	750	353	2200	60	Piercing Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
706	750	353	2200	60	Piercing Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
707	750	353	2200	60	Piercing Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
708	750	353	4600	60	Brass Mill	Geared	1924	Scoville Mfg. Co.	Waterbury, Conn.	W
709	750-625-460	460-300-220	6600	25	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
710	750	360	4600	60			1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
711	750-750	360-860	600	d.c.	14" Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
712	750	375	2200	25	10" Aluminum Rod Mill	Geared	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
713	750	443	4600	60		Coupled	1921	Detroit Copper & Brass Co.	Detroit, Mich.	AC
714	750-600-440	473-375-278	6600	25	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
715	750	500	230	d.c.	14" Rail Rerolling Mill	Geared	1925	Ford Motor Co.	River Rouge, Mich.	AC
716	750	505	2200	60		Geared	1924	Kansas City Bolt & Nut Co.	Kansas City, Mo.	AC
717	750	514	2200	60	Wire Red Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
718	750	514	440	60	14" Merchant Mill	Geared	1920	Witherow Steel Co.	Neville Island, Pa.	AC
719	750	514	550	60	10" and 9" Copper Mills	Geared	1919	American Brass Co.	Hastings, N. Y.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
720	750	514	550	60	10" and 9" Copper Mills	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
721	750	514	2200	60	Merchant Mill	Geared	1920	W. M. Lewis	Indianapolis, Ind.	AC
722	750	600	4000	60	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
723	750	720	2200	60	Zinc Rolling Mill	Geared	1923	American Zinc Products Co.	Greencastle, Ind.	GE
724	750	720	550	50	Brass Rolling Mill	Geared	1925	American Brass Co.	Ansonia, Conn.	GE
725	770-700-630	540-490-440	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
726	800	20	230	d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
727	800	20	230	d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
728	800	0-37-70	500	d.c.	Plate Mill	Coupled	1919	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
729	800	94	2200	25	18" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
730	800	100	6600	25	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
731	800	107	6600	25	Tube Rolling Mill	Coupled	1925	National Tube Co.	Lorain, Ohio	AC
732	800	109	2200	60	2-21" Rolls	Coupled	1924	Globe Steel Tube Co.	Milwaukee, Wis.	AC
733	800	140-510	600	d.c.	10" Rod Mill	Direct	1927	American Steel & Wire Co.	Worcester, Mass.	W
734	800	140-510	600	d.c.	10" Rod Mill	Direct	1927	American Steel & Wire Co.	Worcester, Mass.	W
735	800	163	2200	25	22" Merchant Blooming	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
736	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
737	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
738	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1927	Illinois Steel Co.	S. Chicago, Ill.	GE
739	800	189	2200	60	Merchant Mill	Direct	1925	Pacific Coast Steel Co.	San Francisco, Cal.	CW
740	800	200-300	500	d.c.	Piercing Mill	Rope	1913	Pittsburgh Steel Products Co	Monessen, Pa.	W
741	800	200-300	500	d.c.	Piercing Mill	Direct	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
742	800-800	200-400	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
743	800	200-400	250	d.c.	9" 7 Stand Mill	Coupled	1926	Crucible Steel Co. of America	Harrison, N. J.	AC
744	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
745	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
746	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
747	800	200-600	500	d.c.	10" Merchant Rod & Strip Mill	Geared	1927	Ford Motor Co.	Detroit, Mich.	W
748	800-800	214-167	6600	25	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
749	800	214	2200	25	Sheet Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
750	800	214	2200	25	Sheet Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
751	800	220-150	2200	25	12" Bar (Finishing) Mill	Direct	1919	Scullin Steel Co.	St. Louis, Mo.	W
752	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
753	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
754	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
755	800	225	2200	60	Roughing Mill	Geared	1916	Standard Seamless Tube Co.	Economy, Pa.	GE
756	800-800	231-462	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
757	800	240-480	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
758	800	250-500	230	d.c.	14" and 9" Hoop Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
759	800	250	2200	60	Piercing Mill	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
760	800	250	2200	60	22" Bar Mill	Rope	1915	Timken Roller Bearing Co.	Canton, Ohio	W
761	800	250-750	600	d.c.	14" Hot Strip Mill	Direct	1927	Trumbull Steel Co	Warren, Ohio	GE
762	800-800	256-512	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
763	800	257	2200	60	Bar Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
764	800	257	2200	60	12" Rod Mill	Belt	1915	Crucible Steel Co. of America	Harrison, N. J.	GE
765	800	257	2200	60	Hot Strip Mill	Geared	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
766	800	268	2200	60	14"-10" Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
767	800-800	275-550	600	d.c.	14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
768	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
769	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
770	800	275-550	700	d.c.	9" Merchant Mill	Direct	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
771	800	277	2200	60	Bar Mill	Geared	1918	Pacific Coast Steel Co.	San Francisco, Calif.	AC
772	800	292	2200	25	18" Tandem Billet Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
773	800	300	2200	60				Pittsburgh Steel Prod. Co.	Monessen, Pa.	AC
774	800-800	315-210	575	d.c.	6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
775	800	320	440	60	9" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
776	800	320	440	60	10" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mills	Pittsburgh, Pa.	W
777	800	350	2200	60	24" Bull Head Rolls of Sheet Bar Mill	Geared	1915	Central Steel Co.	Massillon, Ohio	W
778	800	350	2200	60	Billet Mill	Geared	1915	Milton Manufacturing Co.	Milton, Pa.	W
779	800	350	2200	60	Aluminum Mill	Geared	1915	U. S. Aluminum Co.	Edgewater, N. J.	W
780	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
781	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
782	800	350-700	600	d.c.	20" Merchant Breakd'wn)	Geared	1921	Driver Harris	Harrison, N. J.	W
783	800	350-750	600	d.c.	8" Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
784	800	353	2200	60	12"-5 Stand Merch. Mill	Belt	1924	United Steel Company	Everett, Wash.	W
785	800	353	440	50	8" Copper Rod Mill	Direct	1923	Standard Underground Cable Co.	St. Louis, Mo.	W
786	800-400	360-180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
787	800-400	360-180	550	60	Bar Mill	Geared	1926	Ludlum Steel Col.	Warervliet, N. Y.	GE
788	800	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
789	800	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
790	800	367	2200	25	8" Merchant Mill	Direct	1918	Donner Steel Co.	Buffalo, N. Y.	W
791	800	370	650	d.c.	Aluminum Mill	Direct	1917	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
792	800	370-400	650	d.c.	Aluminum Mill	Direct	1919	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
793	800	375	2200	25	Sheet Mill, Cold Rolls	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
794	800	375	2200	25	Merchant Mill	Geared	1920	Bethlehem Steel Co.	Johnstown, Pa.	GE
795	800-800	390-260	575	d.c.	6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
796	800	400-600	600	d.c.	16" Merchant Mill	Geared	1921	Missouri Rolling Mills Co.	St. Louis, Mo.	W
797	800	410-720	230	d.c.	16" Merchant (Rough.)	Geared	1923	Timken Roller Bearing Co.	Canton, Ohio	W
798	800	435	2200	60	No. 2 Hoop Mill	Geared	1925	Connors Steel Co.	Birmingham, Ala.	W
799	800	440	2200	60	18" Merchant (Finishing)	Geared	1918	Canton Sheet Steel Co.	Canton, Ohio	W
800	800	443	2200	60	Roughing Mill	Coupled	1921	International Nickel Co.	Huntington, W. Va.	AC
801	800	450	2200	60	14" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
802	800	450	2200	60	Wire Rod Mill	Coupled	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
803	800-400	450-225	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Montana	GE
804	800	505	2200	60	9" Hot Strip Mill	Direct	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
805	800	505	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
806	800	505	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
807	800	514	2200	60	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
808	800	535-750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
809	800	535-750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
810	800	585-292	6600	60	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
811	800	600	2200	60	Hot & Cold Sheet Mill	Geared	1924	American Nickel Co.	Clearfield, Pa.	GE
812	800	705	2200	60	12" Merchant Mill	Geared	1919	McConway-Torley Co.	Pittsburgh, Pa.	W
813	800-363	706-320	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
814	800-363	706-320	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
815	800-363	706-320	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
816	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
817	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
818	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
819	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
820	800	720	4600	60	Rolling Mill	Geared	1925	Mich. Copper & Brass Co.	Detroit, Mich.	AC
821	800-800-800	720-600-480	2200	60	3-High Blooming Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	GE
822	800	730-365	2200	50	22" Bar Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
823	800	730-365	2200	50	12" Merchant Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
824	800	730-485	2200	50	12" Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
825	800	870	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
826	800	870	2200	60	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
827	800	875-700	2200	60	16" Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
828	800	880-490	2200	60	Bar Mill	Geared	1920	Knoxville Iron Co.	Knoxville, Tenn.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
829	800	892–623	2200	60	20″ Merchant (Finishing)	Geared	1919	Hoosier Rolling Mills Co.	Terre Haute, Ind.	W
830	800	900	440	60	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
831	800–800	900–720	2200	60	9″ Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
832	800–800	900–720	2200	60	9″ Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
833	840–700–560	360–300–240	6600	25	9″ Merchant Mill	Direct	1925	Bethlehem Steel Co.	Bethlehem, Pa.	GE
834	850–570	214–143	6600	25	Merchant Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
835	850–850	214–187	6600	25	10″ Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
836	850–850	214–187	6600	25	10″ Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
837	850	250–500	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
838	850	514	2200	60	14″ Merchant Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	W
839	850	505	2200	60	24″ Bar (Roughing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
840	850	710	2200	60	20″ Blooming Mill	Geared	1923	Washburn Wire Co.	Phillipsdale, R. I.	W
841	900	94	2200	25	Jobbing Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
842	900	94	2200	25	Jobbing Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
843	900	163	2200	60	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
844	900	163	2200	60	Wire Rod Mill	Rope	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
845	900–720	200–160	220	d.c.	Wheel Mill	Geared	1906	Bethlehem Steel Co.	Johnstown, Pa.	GE
846	900–900	214–150	2200	25	12″ Merchant Mill	Direct	1910	Algoma Steel Co.	Sault Ste. Marie,Can.	GE
847	900–710–620	325–257–182	2300	60	10″ Hoop Mill	Geared	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
848	900	425–640	250	d.c.	12-10″ Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
849	900	900	440	60	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
850	975–375	650–250	600	d.c.	Rod (Roughing) Mill	Geared	1922	Atlantic Steel Co.	Atlanta, Ga.	W
851	975–510	865–450	600	d.c.	Rod (Finishing) Mill	Direct & Belt	1922	Atlantic Steel Co.	Atlanta, Ga.	W
852	1000	40–60	270	d.c.	28″ Rev. Copper Mill	Direct	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
853	1000	50–100	600	d.c.	24″ Billet (Roughing)	Direct	1916	American Steel & Wire Co	Cleveland, Ohio	W
854	1000	50–175	600	d.c.	24″ Mill	Direct	1916	Central Steel Co.	Massillon, Ohio	W
855	1000	83	2200	25	Sheet Mill	Rope	1910	Follansbee Bros.	Follansbee, W. Va.	GE
856	1000	125	230	d.c.	Sheet Bar Mill	Geared	1920	Allegheny Steel Co.	Brackenridge, Pa.	GE
857	1000	133	2200	25	Structural (Finishing)	Direct	1910	Illinois Steel Co.	South Chicago, Ill.	W
858	1000	137	6600	25	Wheel Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
859	1000	184	2200	25	16″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
860	1000	200–600	600	d.c.	10″ Merchant Mill	Geared	1925	McKinney Steel Co.	Cleveland, Ohio	W
861	1000	200–480	250	d.c.	12-9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
862	1000	200–480	250	d.c.	12-9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
863	1000–2000	200–400–600	250	d.c.	12-10″ Gautier Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
864	1000	209	6600	25	14″ Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
865	1000	210–510	230	d.c.	Bar Mill	Geared	1925	Donner Steel Co.	Buffalo, N. Y.	W
866	1000	214–150	6400	25	24″ Flat (Finishing) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
867	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
868	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
869	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
870	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
871	1000	240	440	60	Sheet Mill	Geared	1918	Robertson Iron & Steel Co.	Springfield, Ohio	AC
872	1000	240	220	60	Tube Mill	Geared	1919	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
873	1000	240	2200	60	Tube Mill	Rope & Direct	1917	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
874	1000	245	2200	25	30″ Sheet Jobbing Mill	Rope	1910	American Rolling Mills Co.	Middletown, Ohio	W
875	1000	250	6600	25	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
876	1000	250	6600	25	Tin Mill	Geared	1919	Bethlehem Steel Co.	Spartows Pt., Md.	GE
877	1000	250	6600	25	Sheet Mill	Geared	1919	Bethlehem Steel Co	Sparrows Pt., Md.	GE
878	1000	250	6600	25	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Point, Md.	GE
879	1000	250	2200	60	18″ Merchant Mill	Geared	1918	Canton Sheet Steel Co.	Canton, Ohio	W
880	1000	250	2200	60	Sheet Mill	Geared	1929	American Rolling Mills Co.	Zanesville, Ohio	W
881	1000	250	2200	25	Sheet Mill	Geared	1920	Otis Steel Co.	Cleveland, Ohio	AC
882	1000	250	2200	25	Sheet Mill	Geared	1920	Otis Steel Co.	Cleveland, Ohio	AC
883	1000–400	257–128	550	60	9″ Bar Mill No. 1	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
884	1000	277	2200	60	Strip Mill	Geared	1919	American Tube & Stamping Co.	Bridgeport, Conn.	GE
885	1000	290–500	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Indiana	GE
886	1000	293	6600	25	14″ Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
887	1000	295	2200	60	12″ Cont. & 10″ Merch.	Direct	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
888	1000	300	2200	25	10″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
889	1000	300–150	2200	60	12″ Merchant Mill	Direct	1918	Central Steel Co.	Massillon, Ohio	W
890	1000	300	2200	60	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
891	1000	300	2200	60	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
892	1000	300	2200	60	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
893	1000	300	2200	60	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
894	1000	300	2200	25	Aluminum Rod Mill	Geared	1922	U. S. Aluminum Co.	Massena, N. Y.	GE
895	1000	300–400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
896	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
897	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
898	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
899	1000	333	2200	50	36″ Sheet Mill	Geared	1927	Columbia Steel Co.	Torrance, Calif.	GE
900	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
901	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
902	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
903	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
904	1000	350–700	600	d.c.	12″ Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
905	1000	360	2200	60			1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
906	1000	365	2200	50	Merchant Mill	Geared	1923	Columbia Steel Co.	Torrence, Cal.	W
907	1000	375	2200	25	Bar Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
908	1000	375	2200	25	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
909	1000	375	6600	25	Piercing Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
910	1000	375	4400	25	Merchant Mill	Geared	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
911	1000	375	2200	25	54″ Plate Mill	Geared	1927	Alan Wood Iron & Steel Co.	Conshohocken, Pa.	GE
912	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
913	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
914	1000	450	2200	60	Piercing Mill	Geared	1918	Winchester Rep. Arms Co.	New Haven, Conn.	AC
915	1000	450	2200	60	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
916	1000	450	2200	60	20″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
917	1000	518–800	250	d.c.	20″ Merchant Mill	Geared	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
918	1000	585	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill	Middletown, Ohio	W
919	1000	590–495	6600	60	24″ Structural Mill	Geared	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	W
920	1000	590–450	4000	60	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
921	1000	590–450	4000	60	14″ Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
922	1000	600	2200	60	16″ Skelp Mill	Geared	1923	Elyria Iron & Steel Co.	Elyria, Ohio	GE
923	1000	600	2300	60	Copper Mill	Geared	1925	American Copper Products Co.	Elizabeth, N. J.	GE
924	1000	600	2200	60	Hot and Cold Sheet Mills	Geared	1925	American Nickel Corp.	Clearfield, Pa.	GE
925	1000	705	2200	60	16″ Strip Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	W
926	1000	720	4000	60	18″ 2-Stand Rerolling Rail Mill	Geared	1923	Buckeye Rolling Mill Co.	Newark, Ohio	GE
927	1000	710	2200	60	20″ Special Bar Mill	Geared	1925	Rail Joint Company	Troy, N. Y.	W
928	1000	710	2200	60	20″ Special Bar Mill	Geared	1925	Rail Joint Company	Troy, N. Y.	W
929	1000	720	6600	60	Rod Mills Nos. 8 and 9	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
930	1000	720	6600	60	Rod Mill No. 7	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
931	1000	725	2200	25	12″ Merchant Mill	Geared	1922	Burlington Steel Co., Ltd.	Hamilton, Ont.	W
932	1100–1500	91	2200	25	84″ Plate (Fin.) Mill	Direct	1909	American Sheet & Tin Plate Co.	Gary, Ind.	W
933	1100	214–320	600	d.c.	12″ Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Pt., Md.	W
934	1100	240–382	600	d.c.	12″ Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Pt., Md.	W
935	1100	294–205	2200	60	20″ Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
936	1125–900–675	312–250–187	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE

No.	Horse Power	R.P.M.	Volt-age	Cycle	Type and Size of Mill	Method of Drive	Date of Pur-chase	Name of Plant	Location	Mfgd. By
937	1150	250	6600	25	Jobbing Sheet Mill	Geared	1913	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
938	1180–955–705	560–450–336	2200	60	Rod Mill	Belt	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
939	1190–875–525	350–250–150	2200	25	Merchant Mill	Direct-Rope	1925	Bethlehem Steel Co.	Lebanon, Pa.	GE
940	1200	25–50	330	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
941	1200–1200	150–250	230	d.c.	12″ Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
942	1200	160–320	250	d.c.	12″ Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
943	1200	200	2200	60	Piercing Mill	Rope	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
944	1200	200–400	230	d.c.	14″ Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
945	1200	200–400	230	d.c.	14″ Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
946	1200	214	2200	25	84″ Plate Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
947	1200	214	2200	25	Jobbing Sheet Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
948	1200	240	440	25	26″ Sheet Mill	Rope	1907	Seneca Iron & Steel Co.	Buffalo, N. Y.	W
949	1200	240	2200	60	Sheet Mill	Geared	1915	Empire Rolling Mills	Cleveland, Ohio	GE
950	1200	240	2200	60	Hot Sheet Mill	Coupled	1916	Standard Tin Plate Co.	Canonsburg, Pa.	CW
951	1200	240	2200	60	Sheet Mill	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
952	1200	240	2200	60	Sheet Mill	Geared	1916	United Alloy Steel Corp.	Canton, Ohio	GE
953	1200	240	2200	60	Sheet Mill	Geared	1917	United Alloy Steel Corp.	Canton, Ohio	GE
954	1200	240	2200	60	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
955	1200	240	2200	60	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
956	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
957	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Oa.	CW
958	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
959	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
960	1200	240	2200	60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Co.	Canonsburg, Pa.	CW
961	1200	244	2200	25	Sheet Mill	Geared	1917	Bethlehem Steel Co.	Sparrows Pt., Md.	W
962	1200	244	2200	25	Sheet Mill	Geared	1917	Bethlehem Steel Co.	Sparrows Pt., Md.	W
963	1200	244	2200	25	Sheet Mill	Geared	1920	American Rolling Mills Co.	Middletown, Ohio	W
964	1200	244	2200	25	Sheet Mill	Geared	1920	American Rolling Mills Co.	Middletown, Ohio	W
965	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills	Middletown, Ohio	W
966	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills	Middletown, Ohio	W
967	1200	277	2200	60	Sheet Mill	Geared	1925	Wheeling Steel Corp.	Wheeling W. Va.	GE
968	1200	257	4600	60	Tube Mill	Rope & Coupled	1918	Detroit Seamless Tube Co.	Detroit, Mich.	AC
969	1200	292	2200	25	12″ Continuous and 10″ Merchant Mill	Direct & Rope	1912	Laclede Steel Co.	Alton, Ill.	W
970	1200	294	2200	60	Tube Rolling Mill	Geared	1915	National Tube Co.	Ellwood City, Pa.	W
971	1200	294	2200	60	Rolling Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind	W
972	1200	295	6600	60	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
973	1200	295	6600	60	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
974	1200–1150–800	300–214–150	2200	25	Merchant Mill, No.10	Geared	1916	Bethlehem Steel Co.	Lackawanna, N.Y.	GE
975	1200–1000–800	300–250–200	4400	25	14″ Merchant Mill	Direct	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
976	1200	300	4100	50	Sheet Mill	Geared	1920	Chapman Price Steel Co.	Indianapolis, Ind.	GE
977	1200	300	2200	60	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
978	1200	300	2200	60	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
979	1200	300	2200	60	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
980	1200	300	2200	60	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
981	1200	300–500	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
982	1200–1200–865	340–277–200	2200	60	11″ Merchant Mill	Geared	1927	Bourne Fuller Co.	Cleveland, Ohio	GE
983	1200	352	2200	60	Sheet Mill	Rope	1917	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
984	1200	360	2200	60	Morgan Wire Rod Mill	Geared	1918	Interstate Iron & Steel Co.	Chicago, Ill.	AC
985	1200	360	2200	60	30″ Sheet Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
986	1200	360	2200	60	24″ Bar Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	AC
987	1200	367	2200	25	Cold Rolling Mill	Geared	1917	Bethlehem Steel Co.	Sparrows Pt., Md.	W
988	1200	368	2200	50	20″ Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
989	1200	400	650	d.c.	Aluminum Plate Mill	Geared	1915	Aluminum Company of America	Niagara Falls, N. Y.	GE
990	1200–1000–800	450–375–300	6600	25	8″ Hoop Mill, No. 8	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
991	1200–1000–800	450–375–300	6600	25	8″ Hoop Mill, No. 9	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
992	1200–1000–800	450–375–300	6600	25	8″ Bar Mill, No. 16	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
993	1200–1200–1200	450–360–270	2300	60	9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
994	1200–1200–1200	450–360–270	2300	60	9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
995	1200–1200–1200	450–360–270	2300	60	9″ Hot Strip Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
996	1200–1000–800	450–375–300	6600	25	18″ Band Mill, No. 13	Geared	1919	Carnegie Steel Co.	Youngstown, Ohio	GE
997	1200	450	6600	60	Rail Mill Finishing Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
998	1200	485	6400	25	12″ Merchant Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
999	1200	500	2200	25	28″ Rail Mill	Geared	1914	Bethlehem Steel Co.	Steelton, Pa.	GE
1000	1200	500	2200	25	72″ Jobbing Plate Mill	Geared	1926	Alan Wood Iron & Steel Co.	Coshocton, Pa.	GE
1001	1200	505–303	6600	60	16″ Band Mill	Geared	1919	Weirton Steel Co.	Weirton, W. Va.	W
1002	1200	505	2200	60	29″ Bar (Roughing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
1003	1200	514	2200	60	Bar Mill	Geared	1917	Elyria Iron & Steel Co.	Elyria, Ohio	AC
1004	1200	514	2200	60	Wire Rod Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
1005	1200	590	2200	60	22″ Strip Mill	Geared	1919	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
1006	1200	590	2200	60	24″ Blooming Mill	Geared	1919	McConway-Torley Co.	Pittsburgh, Pa.	W
1007	1200	590–450	2200	60	Duo and Bull Head Mill	Geared	1916	Central Steel Co.	Massillon, Ohio	W
1008	1200	590–407	2200	60	20″ Merchant (Roughing)	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
1009	1200	705	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1010	1250	175–400	230	d.c.	Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
1011	1250–1250	175–350	600	d.c.	14″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1012	1250–1250	175–350	600	d.c.	14″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1013	1250	250	6600	25	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1014	1250	250	6600	25	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1015	1250	250	6600	25	Cold Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1016	1250	250	6600	25	Sheet Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1017	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1018	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1019	1250	250	6600	25	Cold Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1020	1250	294	6600	25	14″ Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1021	1250	300	6600	25	Steel Mill	Geared	1925	American Sheet & Tin Plate Co.	Wellsville, Ohio	AC
1022	1250	300–550	500	d.c.	10″ Merchant Mill	Direct	1927	Ford Motor Co.	Detroit, Mich.	W
1023	1250	375	2080	25	18″ Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1024	1250	375	2080	25	18″ Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1025	1250	375	2200	25	Merchants Bar Mill	Geared	1919	Valley Steel Co.	Milwaukee, Wis.	AC
1026	1250–1000–650	650–500–325	2200	25	Rod Mill	Belt	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1027	1250	712–430	6600	60	3 Stand 12″ Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1028	1300–900	214–140	2200	25	12″ Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
1029	1300–1300	214–187	6600	25	10″ Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	GE
1030	1300	360	2200	60	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
1031	1300	500	6600	25	Rod (Finishing) Mill	Rope	1912	American Steel & Wire Co.	Birmingham, Ala.	W
1032	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
1033	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
1034	1350	600	2300	60	Copper Mill	Geared	1918	American Brass Company	Waterbury, Conn.	GE
1035	1400	240	2200	60	Sheet Mill	Geared	1912	Apollo Steel Co.	Apollo, Pa.	GE
1036	1400	450–550	500	d.c.	12″ Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
1037	1400	505	2200	60	14″ Billet Mill	Geared	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
1038	1400–945	600–405	2200	60	21″ Merchant Mill	Geared	1915	Bourne-Fuller Co.	Cleveland, Ohio	GE
1039	1500	50–80	600	d.c.	Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1040	1500	62–½	6600	25	Tube Rolling Mill	Coupled	1926	Gary Tube Co.	Gary, Indiana	AC
1041	1500	62–½	6600	25	Tube Mill	Direct	1927	National Tube Co.	Lorain, Ohio	AC
1042	1500	65–225	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1043	1500	65–225	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1044	1500	80	2200	60	Morgan Continuous Mill	Coupled	1920	Interstate Iron & Steel Co.	Chicago, Ill.	AC

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1045	1500	94	2200	25	18" Merchant Mill	Direct	1910	Algoma Steel Co.	Sault Ste. Marie,Can.	GE
1046	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
1047	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
1048	1500	100–150	600	d.c.	14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1049	1500	125–250	230	d.c.	14" Band Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
1050	1500	125–250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1051	1500	125–250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1052	1500	133–81.5	6600	25	18" Structural Mill	Direct	1915	Bethlehem Steel Co.	So. Bethlehem, Pa.	W
1053	1500	150	6600	25	Wire Rod Mill	Coupled	1914	Illinois Steel Co.	Joliet, Ill.	AC
1054	1500	150–300	250	d.c.	18–14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
1055	1500	150–300	250	d.c.	18–14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
1056	1500	182–162	6600	25	10" Bar Mill	Direct & Rope	1913	Carnegie Steel Co.	Duquesne, Pa.	W
1057	1500	187	2200	25	Sheet Mill	Chain	1914	National Enamel & Stamping Co.	Granite City, Ill.	AC
1058	1500	198–400	600	d.c.	10" Strip Mill	Rope & Direct	1926	LacLede Steel Co.	Alton, Ill.	W
1059	1500	200	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1060	1500	200–400	600	d.c.	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Co.	Chicago, Ill.	W
1061	1500	200–300	600	d.c.	10" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1062	1500	210	2200	25	30" Sheet Mill	Rope	1910	American Rolling Mill Co.	Middletown, Ohio	W
1063	1500	218–145	6600	25	18" Merchant Mill	Geared	1916	Carnegie Steel Co.	Duquesne, Pa.	W
1064	1500	234	2200	60	Sheet Mill	Geared	1915	Canton Sheet & Steel Co.	Canton, Ohio	W
1065	1500	234	2200	60	Sheet Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
1066	1500	234	220	60	26" Sheet Bar Mill	Geared	1916	Canton Sheet Steel Co.	Canton, Ohio	W
1067	1500	234	2200	60	Sheet Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
1068	1500	234	2200	60	Sheet Mill	Geared	1919	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
1069	1500	234	2200	60	10" Rod Mill	Geared	1921	Columbia Steel Co.	Pittsburgh, Cal.	W
1070	1500	240	2200	60	Sheet Mill	Geared	1919	Follansbee Bros.	Toronto, Ohio	AC
1071	1500	240	2200	60	Sheet Mill	Geared	1919	Follansbee Bros.	Toronto, Ohio	AC
1072	1500	240	2200	60	Sheet Mill	Geared	1920	Central Alloy Steel Co.	Canton, Ohio	AC
1073	1500	240	2200	60	Sheet Mill	Geared	1922	Central Alloy Steel Co.	Canton, Ohio	GE
1074	1500	250	2200	25	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
1075	1500	250	2200	25	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
1076	1500	257	2200	25	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
1077	1500	270	2200	60	Sheet Mill	Geared	1914	Youngstown Sheet & Tube Co.	Warren, Ohio	W
1078	1500	270	2200	60	24" Sheet Bar & Billet Mill	Geared	1914	Central Steel Co.	Massillon, Ohio	W
1079	1500	270	2200	60	Lamberton Rod Mill	Geared	1915	United Alloy Steel Corporation	Canton, Ohio	W
1080	1500	270	2200	60	22" Bar and Billet Mill	Geared	1918	Central Steel Co.	Massillon, Ohio	W
1081	1500	277	2200	60	22" Skelp Mill	Direct	1924	Bethlehem Steel Corp.	Coatesville, Pa.	GE
1082	1500–1500	280–420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1083	1500–1500	280–420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1084	1500–1500	280–420	600	d.c.	20" Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1085	1500	295	2200	60	Sheet Mill	Geared	1924	Kansas City Bolt & Nut Co.	Kansas City, Mo.	AC
1086	1500	300	4600	60	Sheet Mill	Geared	1922	Michigan Steel Corp.	Detroit, Mich.	GE
1087	1500	300	4600	60	Sheet Mill	Geared	1924	Michigan Steel Corp.	Detroit, Mich.	GE
1088	1500–1250–875	300–250–175	2200	50	Merchant Mill	Direct	1925	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	GE
1089	1500–1200–900	320–275–200	2200	60	10" Merchant Mill	Geared	1925	Pacific Coast Steel Co.	So. San Fran., Cal.	GE
1090	1500	322–193	2200	60	18" Sheet Bar Mill	Geared	1926	Columbia Steel Co.	Pittsburgh, Calif.	W
1091	1500	355	2200	60	35" Blooming Mill	Geared	1924	Timken Roller Bearing Co.	Canton, Ohio	AC
1092	1500	360–240	6600	25	12" Merchant Mill	Rope	1916	Carnegie Steel Co.	Duquesne, Pa.	W
1093	1500	360	6400	25	Billet Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
1094	1500	360	2200	60	10" Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
1095	1500–1250–1000	360–300–240	2200	25	28" Rail Mill	Geared	1920	Bethlehem Steel Co.	Steelton, Pa.	GE
1096	1500	360	4000	60	Sheet Mill	Geared	1923	Pacific Sheet Steel Corp.	So.San Francisco,Cal.	GE
1097	1500	360	2200	60	Sheet Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
1098	1500	368	2200	25	Sheet Bar (Finishing) Mill	Geared	1923	Inland Steel Co.	Chicago, Ill.	W
1099	1500–1125	375–281	2200	25	10" Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1100	1500	375	2200	25	26" 3 high Blooming Mill	Geared	1920	Atlas Crucible Steel Co.	Dunkirk, N. Y.	GE
1101	1500	375	6600	25	Tube Rolling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
1102	1500	440	2200	60	22" Bar Mill	Geared	1919	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
1103	1500	450	2200	30	3 High Skelp Mill	Geared	1915	Spang Chalfant Co.	Etna, Pa.	GE
1104	1500–1500–1200	450–360–270	2300	60	16" Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
1105	1500	450	2200	60	Roughing Mill	Geared	1919	Pacific Coast Steel Co.	San Francisco, Calif.	AC
1106	1500	450	2200	60	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
1107	1500	450	2200	60	9" Rod Mill	Direct	1926	Washburn Wire Co.	Philipsdale, R. I.	W
1108	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1109	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1110	1500	450–550	600	d.c.	Rod Mills Nos. 16, 18	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1111	1500–1200–900	468–375–281	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1112	1500	470–510	230	d.c.	Rod Mill	Direct	1923	John A. Roebling Sons	New York, N. Y.	W
1113	1500	491	6600	25	14" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
1114	1500	505	6600	60	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
1115	1500	257–508	6600	60		Coupled	1924	Weirton Steel Co.	Weirton, W. Va.	AC
1116	1500	508	6600	60	Steel Mill	Geared	1924	Weirton Steel Co.	Weirton, W. Va.	AC
1117	1500	514	2200	60	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
1118	1500	514	6600	60	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
1119	1500–1500	514–237	6600	60	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
1120	1500	593	6600	60	6 Stand 11" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1121	1500	600	2200	60	Light Rail Mill	Geared	1919	West Virginia Rail Co.	Huntington, W. Va.	AC
1122	1500	705	2200	60	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1123	1500	705	2200	60	Srtip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1124	1500	705	2200	60	24" Bar (Finishing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
1125	1500	705	2200	60	Skelp Mill Scarfing Stand	Geared	1923	Bethlehem Steel Corp.	Coatesville, Pa.	AC
1126	1500	705	2200	60	22" Bar Mill	Geared	1924	Atchison, Topeka & Sante Fe Ry.	San Francisco, Cal.	AC
1127	1500	705	2200	60	20"-16" Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
1128	1500	735	2200	25		Geared	1923	Scullin Steel Co.	St. Louis, Mo.	AC
1129	1500	890–540	6600	60	4 Stand 12" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1130	1600	94	2200	25	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1131	1660	94	2200	25	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1132	1600	94	2200	25	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1133	1600	94	2200	25	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1134	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1135	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1136	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1137	1600	94	2200	25	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
1138	1600	150	6600	25		Direct	1912	Pittsburgh Crucible Steel Co.	Pittsburgh, Pa.	GE
1139	1600	210	2200	25	Sheet Mill	Geared	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
1140	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
1141	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
1142	1600	214	2200	25	84" Plate Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
1143	1600	240	2200	60	Sheet Mill	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
1144	1600	244	2200	25	84" Plate Mill (Roughing)	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
1145	1600	244	2200	25	84" Plate Mill (Finishing)	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
1146	1600	250	440	25	Sheet Mill	Geared	1914	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
1147	1600	257	2200	60	14" Cont. Billet Mill	Geared	1912	Atlantic Steel Co.	Atlanta, Ga.	GE
1148	1600	270	2200	60	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Wheeling, W. Va.	W
1149	1600	270	2200	60	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
1150	1600	500	6600	25	Rod (Finishing) Mill	Rope	1910	American Steel & Wire Co.	Birmingham, Ala.	W
1151	1600	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
1152	1600	440–490–540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
1153	1600	440–490–540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1154	1600	600	2200	60	Piercing Mill	Geared	1921	Standard Seamless Tube Co.	Pittsburgh, Pa.	GE
1155	1600	600	2200	60	Tube Rolling Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
1156	1600	705	2200	60	9″ Hot Strip Mill	Geared	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
1157	1650–1500–1350	413–375–337	6600	25	10″ Bar Mill, No. 10	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1158	1700–1700	90–140	600	d.c.	14″ Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1159	1700–1700	90–205	600	d.c.	14″ Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1160	1700	214	2200	25	Sheet Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1161	1700	214	2200	25	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1162	1700	214	2200	25	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1163	1700	214	2200	25	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1164	1700	214	2200	25	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1165	1700	214	2200	25	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1166	1700	214	2200	25	Tin Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
1167	1700	250	440	25	Hot Sheet Mill	Geared	1925	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
1168	1700	250–500	250	d.c.	12–10″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
1169	1750	70–120	600	d.c.	29″ Billet Mill	Direct	1916	Youngstown Steel & Tube Co.	Indiana Harbor, Ind.	W
1170	1750	100–200	500	d.c.	12″ Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
1171	1750	150–300	230	d.c.	18–14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
1172	1750–1750–1140	485–360–235	2200	60	16″-14″ Merchant Mill	Geared	1927	Bourne Fuller Co.	Cleveland, Ohio	GE
1173	1800	40	600	d.c.	84″ Sheared Plate Mill	Direct	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1174	1800	75	6600	25	30″ Billet Mill	Direct	1914	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1175	1800–1800	115–230	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1176	1800–1800	115–230	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1177	1800–1800	115–230	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1178	1800	120–80	2200	25	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
1179	1800	120–80	2200	25	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
1180	1800	125–250	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1181	1800	125–250	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1182	1800	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
1183	1800	165–350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1184	1800	165–350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
1185	1800	185–370	600	d.c.	20″-16″ Hot Strip Mill	Geared	1925	Acme Steel Co.	Chicago, Ill.	W
1186	1800	185–370	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1187	1800	185–370	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Co.	Chicago, Ill.	W
1188	1800	200–400	600	d.c.	Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1189	1800	214	2200	25	6″ Hot Strip Mill	Rope	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
1190	1800	235	2200	60	Sheet Mill	Geared	1915	Trumbull Steel Co.	Warren, Ohio	W
1191	1800–1500–1200	240–200–160	2300	60	10″ Hoop Mill	Belt	1918	Acme Steel Good Co.	Riverdale, Ill.	GE
1192	1800	240	2200	60	Sheet Mill	Geared	1920	Apollo Steel Co.	Apollo, Pa.	GE
1193	1800–1800	250–125	6600	25	22″ Merchant Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1194	1800	250	2200	60	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
1195	1800	252	2200	60	Tube Rolling Mill	Direct	1925	National Tube Co.	Ellwood City, Pa.	W
1196	1800	253	2200	60	Eight Stand Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
1197	1800	270	6600	60	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
1198	1800	270	6600	60	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
1199	1800	275–550	600	d.c.	12″ Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
1200	1800	275–550	600	d.c.	12″ Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
1201	1800	295	2200	60	32″ Hot Roll Mill	Geared	1926	American Sheet & Tin Plate Co.	Monnessen, Pa.	AC
1202	1800–1350	300	2200	60	Tube Rolling Mill	Geared	1927	National Tube Co.	Ellwood City, Pa.	GE
1203	1800	350–640	500	d.c.	18″ Rougher	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
1204	1800	366	2200	25	22″ Billet & Struct. Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
1205	1800–1800–1800	370–300–247	6600	60	Sheet Bar Mill	Geared	1920	American Rolling Mill Co.	Ashland, Ky.	GE
1206	1800–1500–1200	450–375–300	6600	25	10″ Hoop Mill, No. 11	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1207	1800	500	6600	25	20″ Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
1208	1800	514	2200	60	Rod Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
1209	1800	550–650	250	d.c.	22″ Merchant Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
1210	1850–1450–925	120–94–60	6600	25	16″ Hand Bar Mill	Direct	1921	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1211	1850	575–221	600	d.c.	Rod Mill	Direct & Belt	1922	Atlantic Steel Co.	Atlanta, Ga.	W
1212	2000	50–100	600	d.c.	30″ Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, Ohio	W
1213	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
1214	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
1215	2000	68	6600	25	28″ Rail Mill	Direct	906	Illinois Steel Co.	Gary. Ind.	GE
1216	2000	75	2200	25	Blooming Mill	Direct	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1217	2000	83	6600	25	96″ Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.	Youngstown, Ohio	AC
1218	2000	83	6600	25	84″ Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.	Youngstown, Ohio	AC
1219	2000	85–165	600	d.c.	21″ Cont. Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1220	2000	85–165	600	d.c.	21″ Cont. Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1221	2000	85–165	600	d.c.	21″ Cont. Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1222	2000	94	2200	25	18″ Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
1223	2000–2000–2000	100–83..3–65	6600	25	12″ Structural Mill	Direct	1916	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1224	2000	113	6600	25	12″ Merchant Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	W
1225	2000	134–275	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
1226	2000	137 ¼–275	500	d.c.	10″ Merchant-Rod & Strip Mill	Direct	1927	Ford Motor Co.	Detroit, Mich.	W
1227	2000	163–113	6600	25	10″ Merchant Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	W
1228	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1229	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1230	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1231	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
1232	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
1233	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
1234	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
1235	2000	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1236	2000	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1237	2000–1700	210–680	600	d.c.	14″ Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1238	2000	214	6600	25	40″ Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ind.	GE
1239	2000	214	6600	25	40″ Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ihd.	GE
1240	2000	214	6600	25	40″ Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
1241	2000	214	6600	25	40″ Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
1242	2000	214	2200	25	Jobbing Plate Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
1243	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1244	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1245	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1246	2000	230–460	600	d.c.	Sheet Mill	Geared	1926	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1247	2000	230–460	600	d.c.	10″ Rod Mill	Geared	1927	American Steel & Wire Co.	Worcester, Mass.	W
1248	2000	234–161	2200	60	10″ Skelp (Finishing) Mill	Belt	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1249	2000	234	2200	60	Sheet Mill	Geared	1919	Newton Steel Co.	Newton Falls, Ohio	W
1250	2000	234	2200	60	Tin Mill	Geared	1920	National Enam. & Stamping Co.	St. Louis, Mo.	W
1251	2000	234	2200	60	Sheet Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
1252	2000	234	2200	60	Sheet Mill	Geared	1923	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1253	2000	240	2200	60	32″ Blooming Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
1254	2000	240	2200	60	18″ Sheet Bar Mill	Geared	1920	National Enam. & Stamping Co.	Granite City, Ill.	GE
1255	2000	240	2200	60	Sheet Mill	Geared	1919	Republic Iron & Steel Co.	Niles, Ohio	GE
1256	2000	244	2200	25	90″ Plate Mill	Rope	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
1257	2000	250–150	2200	60	Morgan Continuous Mill	Coupled	1919	Interstate Iron & Steel Co.	Chicago, Ill.	AC
1258	2000–2000	250–161	6600	25	10″ Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1259	2000	250	6600	25	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE

No.	Horse Power	R.P.M.	Volt-age	Cycle	Type and Size of Mill	Method of Drive	Date of Pur-chase	Name of Plant	Location	Mfgd. By
1260	2000	250	6600	25	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
1261	2000	260-800	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1262	2000	294	6600	25	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1263	2000	300	2200	60	Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Scottdale, Pa.	GE
1264	2000	300-500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1265	2000	300-500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1266	2000	300-500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1267	2000	315-500	600	d.c.	10" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
1268	2000	350-234	2200	60	10" Skelp (Roughing) Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1269	2000	375	2200	25	84" Plate Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1270	2000	375	2200	25	Wheel Mill	Geared	1916	Bethlehem Steel Co.	Johnstown, Pa.	AC
1271	2000-2000-1600	450-360-270	2200	60	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1272	2000-2000-1600	450-360-270	2200	60	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1273	2000-2000-1600	450-360-270	2200	60	16" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
1274	2000	450	6600	60	Rail Mill Roughing Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
1275	2000	450	6600	60	25" Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
1276	2000	500-300	2200	50	22" Merchant Mill	Geared	1927	Columbia Steel Corp.	Torrance, Calif.	GE
1277	2000	505	6600	60	Plate Mill	Geared	1922	American Rolling Mills Co.	Ashland, Ky.	W
1278	2000	505	6600	60	Plate Mill	Geared	1922	American Rolling Mills Co.	Ashland, Ky.	W
1279	2000	600	6600	60	Sheet Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1280	2000	600	6600	60	Fin. Stand of 24" Struc. Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1281	2000	600	6600	60		Geared	1925	Tenn. Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1282	2000-1600-1200	625-500-375	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1283	2000-1600-1200	625-500-375	6600	25	14" Bar Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1284	2070-1650-1205	235-187.5-137	6600	25	20" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
1285	2100	50-125	700	d.c.	42" Universal Plate Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1286	2100	47-120	700	d.c.	34" Blooming Mill	Direct	1916	Penn Seaboard Steel Corporation	New Castle, Del.	W
1287	2100-2100	150-310	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1288	2100-1600	150-460	600	d.c.	14" Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1289	2150	50-100	535	d.c.	Reversing Bar Mill	Direct	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
1290	2200	50-120	600	d.c.	40" Universal Plate Mill	Direct	1919	Dominion Foundrys & Steel Co.	Hamilton, Ont.	W
1291	2200	70-150	600	d.c.	28" Blooming Mill	Direct	1920	Atlantic Steel Co.	Atlanta, Ga.	W
1292	2200-2000-1800	275-250-225	6600	25	10" Bar Mill, No. 15	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1293	2200-2000-1800	275-250-225	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio,	GE
1294	2200	505-303	2200	60	18" Bar (Finishing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
1295	2300-1300	115.4-65	6600	25	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1296	2360-1880-1440	410-327-250	2200	60	Rod Mill	Geared	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
1297	2400	500	6600	25	Wire Rod Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
1298	2400	505	2200	60	22" Bar Mill	Geared	1926	Pacific Coast Steel Co.	Seattle, Wash.	W
1299	2470-1725-1235	430-300-215	2200	25	Rod Mill	Geared	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
1300	2500	53-80	660	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
1301	2500	82	6600	60	28" Structural Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1302	2500	113-91	6600	25	12" Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
1303	2500	146	6600	25	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1304	2500	150	6600	25	28" Billet Mill	Geared	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
1305	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind	W
1306	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1307	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1308	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1309	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1310	2500	160-320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
1311	2500	184	6600	25	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
1312	2500	184	6600	25	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
1313	2500	187 ½	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1314	2500	187 ½	6600	25	18" Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
1315	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1316	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1317	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
1318	2500	235	2200	60	84" Plate (Finishing) Mil	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1319	2500	240	2200	60	Sheet Mill	Geared	1919	Wheeling Steel Corp.	Stuebenville, Ohio	GE
1320	2500	240	2200	60	24" Sheet Bar Mill	Geared	1920	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
1321	2500	247	6600	25	Piercing Mill	Geared	1923	Gary Tube Co.	Gary, Ind.	W
1322	2500	247	6600	25	Seamless Tube Mill	Geared	1925	Gary Tube Company	Gary, Ind.	W
1323	2500	252	2200	60	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1324	2500	252	2200	60	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
1325	2500	257	2200	60	Piercing Mill	Geared	1925	Globe Steel Tube Co.	Milwaukee, Wis.	AC
1326	2500	295	6600	25	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1327	2500	295	2200	60	18" Continuous Billet Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	AC
1328	2500	300	2200	25	Sheet Mill	Geared	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1329	2500	352-167	6600	60	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
1330	2500	500	2200	60	22" Bar Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
1331	2600	81.5	6600	25	Rod (Roughing) Mill	Geared	1910	American Steel & Wire Co.	Birmingham, Ala.	W
1332	2600	320-275	600	d.c.	26" & 21" Cont. Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1333	2600	368	6400	25	Rod Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
1334	2750-2240-1750	262-214-167	6600	25	12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
1335	2750-2500-2250	275-250-225	6600	25	14" Bar Mill, No. 14	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1336	2870-1435	400-200	600	d.c.	10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
1337	2900	47-120	700	d.c.	34" Blooming Mill	Direct	1917	Sharon Steel Hoop Co.	Youngstown, Ohio	W
1338	3000	40-100	600	d.c.	Seamless Tube Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1339	3000	65-130	600	d.c.	30" Rev. Bar Mill	Direct	1927	National Tube Co.	Lorain, Ohio	W
1340	3000	65-130	650	d.c.	30" Rev. Bar Mill	Direct	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	W
1341	3000	70-175	750	d.c.	24" Bar Mill	Direct	1927	Inland Steel Corp.	Ind. Harbor, Ind.	GE
1342	3000	70-150	750	d.c.	24" Reversing Bar Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
1343	3000	91	2200	25	Struct. (Roughing) Mill	Geared	1910	Illinois Steel Co.	South Chicago, Ill.	W
1344	3000	125	6400	25	20" Flat Mill	Coupled	1916	American Steel & Wire Co.	Cleveland, Ohio	AC
1345	3000	125-200	600	d.c.	Seamless Tube Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1346	3000	150	6600	25	Wire Rod Mill	Coupled	1920	Minnesota Steel Co.	Steelton, Minn.	AC
1347	3000	150-300	250	d.c.	18"14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
1348	3000	150-300	250	d.c.	18"-14" Structural Mill	Direct	1924	Bethlehem Steel Co.	Johnstown, Pa.	AC
1349	3000-3000-3000	155-144-130	6600	60	24" Structural Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1350	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1351	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1352	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1353	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
1354	3000	180-370	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
1355	3000	184	6600	25	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
1356	3000-3000	200-360	600	d.c.	14" Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1357	3000	209	6600	25	12" & 16" Merchant Mill	Geared	1913	Minnesota Steel Co.	Duluth, Minn.	W
1358	3000	235	2200	60	100" Plate Mill	Geared	1922	National Enam. & Stamping Co.	St. Louis, Mo.	W
1359	3000	245	2200	25	90" Plate Mill	Geared	1920	Inland Steel Co.	Indiana Harbor, Ind.	W
1360	3000	250	6600	25	18" Cont. Billet Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
1361	3000	250	6600	25	Piercing Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
1362	3000	250	6600	25	Piercing Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
1363	3000	250	6600	25	Piercing Mill	Geared	1927	National Tube Co.	Lorain, Ohio	AC
1364	3000	250	6600	25	Piercing Mill	Geared	1927	National Tube Co.	Lorain, Ohio	AC
1365	3000-2500-2000	300-250-200	6600	25	18" Band Mill, No. 13	Direct	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1366	3000-2500-2000	300-250-200	6600	25	12" Hoop Mill, No. 12	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
1367	3000	325-485	600	d.c.	24" Structural Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
1368	3000	354-212	2200	60	Skelp Mill	Geared	1920	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
1369	3000	360	6600	60	28″ Rail Mill	Geared	1919	Dominion Iron & Steel Co.	Sydney, N. S.	GE
1370	3000	375	2200	25	14″ Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1371	3000	375	2200	25	18″ Billet Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
1372	3000	375	6600	25	24″ Sheet Bar Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
1373	3000	450	6600	60	Rod Mills No. 1 to No. 6	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1374	3000	450	6600	60	Rod Mills No. 10 to No. 15	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1375	3000	450	6600	60	Rail Mill, Intermediate Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
1376	3000	450	6600	60	25″ Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
1377	3000–2250–1500	500–375–250	2200	25	24″ Sheet Bar Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
1378	3000	500	6600	25	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1379	3000	500	6600	25	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1380	3000	505–300	2200	60	12″ Merchant Mill	Geared	1920	United Alloy Steel Corporation	Canton, Ohio	W
1381	3100	70–150	600	d.c.	Universal Plate Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
1382	3200	50–120	700	d.c.	34″ Struct. (Rough). Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
1383	3200	50–120	700	d.c.	28″ Struct. (Fin.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
1384	3200	91	6600	25	18″ Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
1385	3200	91	6600	25	14″ Merchant Mill	Geared	1909	Illinois Steel Co.	Gary. Ind.	W
1386	3250	40	500	d.c.	36″ Blooming Mill	Direct	1916	American Rolling Mill Co.	Ashland, Ky.	GE
1387	3250	40	500	d.c.	34″ Blooming Mill	Direct	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
1388	3250	94	6600	25	18″ Sheet Bar Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1389	3500	50–120	700	d.c.	34″ Blooming Mill	Direct	1925	Kokomo Steel & Wire Co.	Kokomo, Ind.	W
1390	3500	50–120	700	d.c.	36″ Blooming Mill	Direct	1925	Phoenix Iron Co.	Phoenixville, Pa.	W
1391	3500	50–100	650	d.c.	Rail Mill	Direct	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
1392	3500	70–100	525	d.c.	32″ Blooming Mill	Direct	1913	Steel Company of Canada	Hamilton, Ont.	W
1393	3500	50–75	700	d.c.	34″ Blooming Mill	Direct	1914	Central Steel Co.	Massillon, Ohio	W
1394	3500	50–120	700	d.c.	35″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	W
1395	3500	92	2200	60	18″ Sheet Bar Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
1396	3500	92	2200	60	21″ Sheet Bar Mill	Direct	1918	Trumbull Steel Co.	Warren, Ohio	GE
1397	3500	390	2200	60	Continuous Billet Mill	Geared	1920	Steel Co. of Canada	Hamilton, Ont.	W
1398	3500	600	2200	60	Piercing Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
1399	3600	40–90	600	d.c.	35″ Blooming Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	W
1400	3600	40–90	600	d.c.	40″ Blooming Mill	Direct	1917	Illinois Steel Co.	Gary, Ind.	W
1401	3600	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
1402	3600–1940	290–156	2200	60	21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1403	3750	50–130	700	d.c.	Blooming Mill	Direct	1927	Central Alloy Steel Co.	Massillon, Ohio	AC
1404	3750	500	2200	60	112″ 3-High Plate Mill	Geared	1925	Lukens Steel Company	Coatesville, Pa.	W
1405	4000	0–150	575	d.c.	36″ Universal Plate Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
1406	4000	58–120	700	d.c.	34″ Blooming Mill	Direct	1924	Donner Steel Co.	Buffalo, N. Y.	GE
1407	4000	58–140	750	d.c.	34″ Reversing Blooming	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
1408	4000	80	600	d.c.	30″ Universal Skelp Mill	Direct	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
1409	4000	0–80	1200	d.c.	34″ Blooming Mill	Coupled	1912	Algoma Steel Co.	Sault Ste. Marie, Can	AC
1410	4000	82	6600	60	110″ Plate Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1411	4000	82	6600	60	110″ Plate Mill	Direct	1918	Dominion Iron & Steel Corp.	Sydney, N. S.	GE
1412	4000	83	6600	25 cy.	110″ Plate Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1413	4000	83	6600	25 cy.	24″ Cont. Billet Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1414	4000	83	6600	25 cy.	110″ Plate Mill	Direct	1917	Carnegie Steel Co.	Homestead, Pa.	GE
1415	4000	83	6600	60 cy.	33″ Structural Mill	Direct	1920	Carnegie Steel Co.	Homestead, Pa.	GE
1416	4000	83.3	6600	25	26″ x 21″ Cont. Mill	Geared	1926	Bethlehem Ste Co.	Sparrows Point, Md.	GE
1417	4000	93	6600	60 cy.	18″ Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
1418	4000	93	6600	60 cy.	21″ Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
1419	4000	147	6600	25 cy.	20″ Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	W
1420	4000	200	6600	60 cy.	120″ Plate Mill	Geared	1920	Worth Steel Co.	Claymont, Del.	GE
1421	4000	360	2200	60 cy.	21″ Sheet Bar Mill	Geared	1917	Sharon Steel Hoop Co.	Lowellville, Ohio	GE
1422	4000	375	6600	25	Rail Mill	Geared	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
1423	4000	375	6600	25	10″ Cont. Wire Rod Mill	Geared	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1424	4000	450	2200	60	24″ Continuous Billet Mill	Geared	1927	Carnegie Steel Co.	Farrell, Pa.	W
1425	4200	93	2200	60 cy.	Continuous Bar Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
1426	4500–4500	67.5–110	500	d.c.	14″ Merchant Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	GE
1427	4500	120–255	750	d.c.	Univ. Skelp Mill	Coupled	1925	Gary Tube Co.	Gary, Ind.	AC
1428	4500	450	2200	60	152″ Plate Mill	Geared	1926	Bethlehem Steel Co.	Coatesville, Pa.	GE
1429	4500–4500	500–300	2200	25 cy.	14″ Merchant Mill	Geared	1923	Inland Steel Co.	Indiana Harbor, Ind.	GE
1430	5000	40–120	600	d.c.	40″ Blooming Mill	Direct	1916	National Tube Co.	Lorain, Ohio	W
1431	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1916	Youngstown Sheet & Tube	Indiana Harbor, Ind.	W
1432	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
1433	5000	50–120	700	d.c.	36″ Rev. Rougher Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
1434	500	50–120	900	d.c.	36″ Roughing Mill	Direct	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1435	5000	70–150	900	d.c.	27″ Rev. Hot Strip Mill	Direct	1926	Columbia Steel Co.	Butler, Pa.	GE
1436	5000	75–120	700	d.c.	48″ Universal Plate Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
1437	5000	75–150	700	d.c.	28″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
1438	5000	99	13200	60	18″ Billet Mill	Direct	1925	Ford Motor Company	Detroit, Mich.	W
1439	5000	100	2200	60	19″ Cont. Sheet Bar Mill	Direct	1927	Continental Steel Corp.	Kokomo, Ind.	GE
1440	5000	197	2200	60 cy.	132″ Plate Mill	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
1441	5000	240	2200	60	51″ Piercing Mill	Direct	1927	Standard Seamless Tube Co.	Economy, Pa.	GE
1442	5000	370	6600	25 cy.	132″ Plate Mill	Geared	1923	Illinois Steel Co.	South Chicago, Ill.	W
1443	5000	370	6600	25 cy.	90″ Plate Mill	Geared	1923	Illinois Steel Co.	South Chicago, Ill.	W
1444	5000	450	2300	60 cy.	18″ Continuous Sheet Bar and Billet Mill	Geared	1919	Wheeling Steel Corporation	Portsmouth, Ohio	GE
1445	5000–4000–3000	450–360–270	2200	60	16″ Hot Strip Mill	Geared	1925	Trumbull Steel Co.	Warren, Ohio	GE
1446	5000	595	6600	60 cy.	28″ 3 Stand Rail	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
1447	5000	594	6600	60 cy.	Sheet & Billet Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	GE
1448	5500–4400–3400	170–136–105	6600	25 cy.	20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
1449	5500	370	6600	25 cy.	16″ Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
1450	5610–4500–3370	156–125–93.6	6600	25	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, O.	GE
1451	5750	94	6600	25 cy.	21″ Cont. Billet Mill	Direct	1914	McKinney Steel Co.	Cleveland, Ohio	GE
1452	5750	94	6600	25 cy.	18″ Bar Mill	Direct	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1453	5750	94	6600	25 cy.	21″ Bar Mill	Direct	1921	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1454	5750	94	6600	25 cy.	18″ Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1455	5750	94	6600	25 cy.	21″ Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
1456	6000	40–120	600	d.c.	44″ Blooming Mill	Direct	1919	Bethlehem Steel Co.	Steelton, Pa.	W
1457	6000	75	6600	25 cy.	40″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
1458	6000	82	6600	25 cy.	28″ Rail Mill	Geared	1914	Minnesota Steel Co.	Duluth, Minn.	W
1459	6000	83	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
1460	6000	83	6600	25 cy.	32″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
1461	6000	83	6600	25 cy.	24″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
1462	6000	83	6600	25 cy.	18″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
1463	6000	83	6600	25 cy.	18″ Sheet Bar Mill	Direct	1910	Illinois Steel Co.	Gary, Ind.	GE
1464	6000	88	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
1465	6000	98	6600	25 cy.	28″–32″ Structural Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
1466	6000	294	2200	60	Billet Mill	Geared	1927	Interstate Iron & Steel Co.	Chicago, Ill.	AC
1467	6250	368	2200	25 cy.	24″ Cont. Billet Mill	Geared	1922	Inland Steel Co.	Indiana Harbor, Ind.	W
1468	6500	40–120	600	d.c.	40″ Blooming Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
1469	6500	50	600	d.c.	36″ Blooming Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
1470	6500	50	600	d.c.	40″ Blooming Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
1471	6500	50	600	d.c.	40″ Blooming Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
1472	6500	60–140	700	d.c.	35″ Rev. Blooming Mill	Direct	1927	Illinois Steel Co.	So. Chicago, Ill.	W
1473	6500–4500	107–53	6600	25 cy.	60″ 3 High Universal Plate Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	GE
1474										
1475	6500	187.5	6600	25	26″ x 21″ Cont.	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1476	6700–5000–3320	500–375–250	6600	25	26″ x 21″ Cont.	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1477	7000	40–120	700	d.c.	Blooming Mill	Coupled	1925	Illinois Steel Co.	South Chicago, Ill.	AC
1478	7000	40–80	750	d.c.	54″ Rev. Blooming Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1479	7000	0–50–120	700	d.c.	44″ Blooming Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
1480	7000	50–120	700	d.c.	40″ Rev. Blooming Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
1481	7000	50–120	700	d.c.	40″ Blooming Mill	Direct	1924	International Harvester Co.	Chicago, Ill.	W
1482	7000	50–120	700	d.c.	36″ Rev. Rougher Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	W
1483	7000	50–120	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
1484	7000	50–120	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
1485	7000	50–100	650	d.c.	46″ Slabbing Mill	Direct	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
1486	7000	0–50–120	700	d.c.	40″ Rev. Blooming Mill	Direct	1926	Forged Steel Wheel Co.	Butler, Pa.	W
1487	7000	50–120	750	d.c.	44″ Blooming Mill	Direct	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1488	7000	55	900	d.c.	45″ Blooming Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
1489	7000	50 100	700	d.c.	60″ Universal Plate Mill	Direct	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	W
1490	7000	65–100	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1491	7000	65–100	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1492	7000	81.7	6600	25 cy.	160″ Plate Mill	Direct	1917	Illinois Steel Co.	Gary, Ind.	W
1493	7500–4040	250–134	2200	60	21″ Continuous Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
1494	7500	375	2200	25	19″ Continuous Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	W
1495	8000	40–120	700	d.c.	54″ Blooming Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
1496	8000	150	600	d.c.	28″ Rail Mill	Direct	1917	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
1497	8000	240	13200	60 cy.	Interrupted Continuous Blooming Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	GE
1498	9000	107	6600	25	Continuous Billet Bar Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE

RAIL AND STRUCTURAL MILL DRIVES

No	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	400	125	230	d.c.	12″ Structural Mill	Direct	1919	Eastern Steel Co.	Pottsville, Pa.	W
2	500	250–600	250	d.c.	12–9″ Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
3	750	500	230	d.c.	14″ Rail Rerolling Mill	Geared	1925	Ford Motor Co.	River Rouge, Mich.	AC
4	900	425–640	250	d.c.	12″ 10–Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
5	1000	133	2200	25 cy.	Structural (Finish) Mill	Direct	1910	Illinois Steel Co.	South Chicago, Ill.	W
6	1000	200–480	250	d.c.	12–9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
7	1000	200–480	250	d.c.	12–9″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
8	1000–2000	200–400–600	250	d.c.	12–10″ Gautier Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
9	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
10	1000	225–168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
11	1000	590–495	6600	60 cy.	24″ Structural Mill	Geared	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	W
12	1000	720	4000	60 cy.	18″ 2-Stand Rerolling Rail Mill	Geared	1923	Buckeye Rolling Mill Co.	Newark, Ohio	GE
13	1200	450	6600	60	Rail Mill, Finishing Stand	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
14	1200	500	2200	25 cy.	28″ Rail Mill	Geared	1914	Bethlehem Steel Co.	Steelton, Pa.	GE
15	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
16	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
17	1500	65–225	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
18	1500	65–225	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
19	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
20	1500	100–125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
21	1500	133–81.5	6600	25 cy.	18″ Structural Mill	Direct	1915	Bethlehem Steel Co.	Bethlehem, Pa.	W
22	1500	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corporation	Johnstown, Pa.	AC
23	1500	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corporation	Johnstown, Pa.	AC
24	1500–1250–1000	360–300–240	2200	25 cy.	28″ Rail Mill	Geared	1920	Bethlehem Steel Co.	Steelton, Pa.	GE
25	1500	600	2200	60 cy.	Light Rail Mill	Geared	1919	West Va. Rail Co.	Huntington, W. Va.	AC
26	1700	250–500	250	d.c.	12–10″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
27	1750	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
28	1800	120– 80	2200	25 cy.	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
29	1800	120– 80	2200	25 cy.	Light Rail Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
30	1800	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
31	1800	366	2200	25 cy.	22″ Structural Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
32	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
33	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
34	2000	68	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
35	2000 2000–2000	100 83.3–65	6500	25 cy.	12″ Structural Mill	Direct	1916	Bethlehem Steel Co.	Bethlehem, Pa.	GE
36	2000	214	6600	25 cy.	40″ Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ind.	GE
37	2000	214	6600	25 cy.	40″ Rail Mill	Geared	1906	Illinois Steel Co.	Gary, Ind.	GE
38	2000	450	6600	60	Rail Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
39	2000	450	6600	60	25″ Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
40	2000	600	6600	60 cy.	Fin. Stand of 24″ Structural Mill	Geared	1924	Tenn. Coal, Iron & R.R. Co.	Fairfield, Ala.	GE
41	2500	82	6600	60 cy.	28″ Structural Mill	Direct	1917	Tenn. Coal, Iron & R.R. Co.	Fairfield, Ala.	GE
42	3000	91	2200	25 cy.	Structural (Rough.) Mill	Geared	1910	Illinois Steel Co.	South Chicago, Ill.	W
43	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
44	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
45	3000 3000–3000	155–144–130	6600	60 cy.	24″ Structural Mill	Direct	1917	Tenn. Coal, Iron & R.R. Co.	Fairfield, Ala.	GE
46	3000	325–485	600	d.c.	24″ Structural Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
47	3000	360	6600	60 cy.	28″ Rail Mill	Geared	1919	Dominion Iron & Steel Co.	Sydney, N. S.	GE
48	3000	450	6600	60	Rail Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
49	3000	450	6600	60	25″ Structural Mill	Geared	1926	Colorado Fuel & Iron Co.	Minnequa, Col.	GE
50	3000	500	6600	25 cy.	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
51	3000	500	6600	25 cy.	26″ Rail Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
52	3200	50–120	700	d.c.	34″ Rev. Struct. (Rough.)	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
53	3200	50–120	700	d.c.	28″ Structural (Fin.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
54	3500	50–120	700	d.c.	35″ Struct. Mill (Rough.)	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
55	3500	50–100	650	d.c.	Rail Mill	Direct	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
56	3500	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
57	3600	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
58	4000	83	6600	60 cy.	33″ Structural Mill	Direct	1920	Carnegie Steel Co.	Homestead, Pa.	GE
59	4000	375	6600	25	Rail Mill	Geared	1925	Bethlehem Steel Co.	Steelton, Pa.	GE
60	5000	50–120	700	d.c.	36″ Struct. (Rough.) Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
61	5000	50–120	900	d.c.	36″ Roughing Mill	Direct	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
62	5000	75–150	700	d.c.	28″ Structural (Fin.) Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
63	5000	595	6600	60 cy.	28″ 3 Stand Rail Mill	Coupled	1921	Tenn. Coal, Iron & R.R. Co.	Birmingham, Ala.	AC
64	6000	75	6600	25 cy.	40″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
65	6000	83	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
66	6000	83	6600	25 cy.	28″ Rail Mill	Geared	1913	Minnesota Steel Co.	Duluth, Minn.	W
67	6000	88	6600	25 cy.	28″ Rail Mill	Direct	1906	Illinois Steel Co.	Gary, Ind.	GE
68	6000	98	6600	25 cy.	28″-32″ Structural Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
69	7000	50–150	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
70	7000	50–150	700	d.c.	52″ Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
71	7000	65–100	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
72	7000	65–100	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
73	8000	150	600	d.c.	28″ Rail Mill	Direct	1917	Bethlehem Steel Co.	Lackawanna, N. Y.	GE

PLATE MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
2	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
3	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
4	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
5	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
6	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
7	300	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
8	500	200	500	d.c.	78" Rev. Brass Plate Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
9	500	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
10	500	575	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
11	600	885	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
12	600	885	2200	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
13	800	20	230	d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
14	800	20	230	d.c.	32" x 48" Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
15	800	0-37-70	500	d.c.	Plate Mill	Coupled	1919	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
16	1000	50-175	600	d.c.	24" Rev. Universal Plate	Direct	1916	Central Steel Co.	Massillon, Ohio	W
17	1000	375	2200	25	54" Plate Mill	Geared	1927	Alan Wood Iron & Steel Co.	Conshohocken, Pa.	GE
18	1100-1500	91	2200	25 cy.	84" Plate (Finishing) Mill	Direct	1909	American Sheet & Tin Plate Co.	Gary, Ind.	W
19	1200	25-50	330	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
20	1200	214	2200	25 cy.	84" Plate mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
21	1200	500	2200	25	72" Jobbing Plate Mill	Geared	1926	Alan Wood Iron & Steel Co.	Coshocton, Pa.	GE
22	1600	214	2200	25 cy.	84" Plate Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
23	1600	244	2200	25 cy.	84" Plate (Rough.) Mill	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
24	1600	244	2200	25 cy.	84" Plate (Finishing) Mill	Geared	1912	Alan Wood Iron & Steel Co.	Ivy Rock, Pa.	W
25	1800	40	600	d.c.	84" Reversing Plate Mill	Direct	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
26	2000	83	6600	25 cy.	96" Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.	Youngstown, O.	AC
27	2000	83	6600	25 cy.	84" Plate Mill	Coupled	1918	Youngstown Sheet & Tube Co.,	Youngstown, O.	AC
28	2000	214	2200	25	Jobbing plate mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	W
29	2000	244	2200	25 cy.	90" Plate Mill	Rope	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
30	2000	375	2200	25 cy.	84" Plate Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
31	2000	505	6600	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
32	2000	505	6600	60 cy.	Plate Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
33	2100	50-125	700	d.c.	42" Rev. Univ. Plate Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
34	2200	50-120	600	d.c.	40" Rev. Univ. Plate Mill	Direct	1919	Dominion Foundrys & Steel Co.	Hamilton, Ont.	W
35	2500	53-80	660	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
36	2500	235	2200	60 cy.	84" Plate (Finishing) Mill	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
37	3000	245	2200	25 cy.	90" Plate Mill	Geared	1920	Inland Steel Co.	Indiana Harbor, Ind.	W
38	3000	235	2200	60 cy.	100" Plate Mill	Geared	1922	Nat'l Enameling & Stamping Co.	St. Louis, Mo.	W
39	3100	70-150	600	d.c.	Universal Plate Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
40	3750	500	2200	60	112" 3 High Plate Mill	Geared	1925	Lukens Steel Company	Coatesville, Pa.	W
41	4000	0-150	575	d.c.	36" Rev. Univ. Plate Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
42	4000	82	6600	60 cy.	110" Plate Mill	Direct	1917	Tenn. Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
43	4000	83	6600	25 cy.	110" Plate Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
44	4000	83	6600	25 cy.	110" Plate Mill	Direct	1917	Carnegie Steel Co.	Homestead, Pa.	GE
45	4000	82	6600	60 cy.	110" Plate Mill	Direct	1918	Dominion Iron & Steel Corp.	Sydney, N. S.	GE
46	4000	200	6600	60 cy.	120" Plate Mill	Geared	1920	Worth Steel Co.	Claymont, Del.	GE
47	4500	450	2200	60	152" Plate Mill	Geared	1926	Bethlehem Steel Co.	Coatesville, Pa.	GE
48	5000	75-100	700	d.c.	48" Rev. Univ. Plate Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
49	5000	197	2200	60 cy.	132" Plate Mill	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
50	5000	370	6600	25 cy.	132" Plate Mill	Geared	1922	Illinois Steel Co.	South Chicago, Ill.	W
51	5000	370	6600	25 cy.	90" Plate Mill	Geared	1922	Illinois Steel Co.	South Chicago, Ill.	W
52	6500-4500	107-53	6600	25 cy.	60" 3 High Univ. Plate	Direct	1909	Illinois Steel Co.	Gary, Ind.	GE
53	7000	0-100	700	d.c.	60" Rev. Univ. Plate Mill	Direct	1919	Bethlehem Steel Co.	Sparrows Point, Md.	W
54	7000	81.7	6600	25 cy.	160" Plate Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	W

BLOOMING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	500	190	230	d.c.	24" Blooming Mill	Geared	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
2	800-800-800	720-600-480	2200	60	3-High Blooming Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	GE
2	850	710	2200	60 cy.	20" Blooming Mill	Geared	1923	Washburn Wire Co.	Phillipsdale, R. I.	W
3	1200	585	2200	60 cy.	24" Blooming Mill	Geared	1919	McConway Torley Co.	Pittsburgh, Pa.	W
4	1500	355	2200	60 cy.	35" Blooming Mill	Geared	1924	Timken Roller Bearing Co.	Canton, Ohio	W
5	1500	375	2200	25 cy.	36" 3 High Blooming Mill	Geared	1920	Atlas Crucible Steel Co.	Dunkirk, N. Y.	GE
6	2000	75	2200	25 cy.	Blooming Mill	Direct	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
7	2000	240	2200	60 cy.	32" Blooming Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
8	2100	47-120	700	d.c.	34" Rev. Blooming Mill	Direct	1916	Penn Seaboard Steel Corporation	New Castle, Del.	W
9	2200	70-150	600	d.c.	28" Rev. Blooming Mill	Direct	1920	Atlantic Steel Co.	Atlanta, Ga.	W
10	2900	47-120	700	d.c	34" Rev. Blooming Mill	Direct	1917	Sharon Steel Hoop Co.	Youngstown, Ohio	W
11	3250	40	500	d.c.	36" Blooming Mill	Direct	1916	American Rolling Mill Co.	Ashland, Ky.	GE
12	3250	40	500	d.c.	34" Blooming Mill	Direct	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
13	3500	70-100	525	d.c.	32" Rev. Blooming Mill	Direct	1913	Steel Company of Canada	Hamilton, Ont.	W
14	3500	50-75	700	d.c.	34" Rev. Blooming Mill	Direct	1914	Central Steel Co.	Massillon, Ohio	W
15	3500	50-120	700	d.c.	34" Blooming Mill	Direct	1925	Kokomo Steel & Wire Co.	Kokomo, Ind.	W
16	3500	50-120	700	d.c.	36" Blooming Mill	Direct	1925	Phoenix Iron Co.	Phoenixville, Pa.	W
17	3600	40-90	600	d.c.	35" Rev. Blooming Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	W
18	3600	40-90	600	d.c.	40" Rev. Blooming Mill	Direct	1918	Illinois Steel Co.	Gary, Ind.	W
19	3750	50-130	700	d.c.	Blooming Mill	Direct	1927	Central Alloy Steel Co.	Massillon, Ohio	AC
20	4000	58-140	750	d.c.	34" Reversing Blooming	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
21	4000	0-80	1200	d.c.	34" Blooming Mill	Coupled	1912	Algoma Steel Co.	Sault Ste. Marie,Can.	AC
22	5000	30-120	600	d.c.	40" Rev. Blooming Mill	Direct	1916	National Tube Co.	Lorain, Ohio	W
23	5000	50-120	600	d.c.	35" Rev. Blooming Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
24	5000	40-120	600	d.c.	35" Rev. Blooming Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
25	6500	40-120	600	d.c.	40" Rev. Blooming Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
26	6500	50	600	d.c.	36" Blooming Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
27	6500	50	600	d.c.	40" Blooming Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
28	6500	50	600	d.c.	40" Blooming Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
29	6500	60-140	700	d.c.	35" Rev. Blooming Mill	Direct	1927	Illinois Steel Co.	So. Chicago, Ill.	W
30	7000	40-120	700	d.c.	Blooming Mill	Coupled	1925	Illinois Steel Co.	South Chicago, Ill.	AC
31	7000	50-120	700	d.c.	40" Rev. Blooming Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
32	7000	50-120	700	d.c.	44" Blooming Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
33	7000	50-120	700	d.c.	40" Blooming Mill	Direct	1924	International Harvester Co., Wisconsin Steel	Chicago, Ill.	W
34	7000	50-120	700	d.c.	36" Rev. Rougher Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	W
35	7000	50-100	650	d.c.	46" Slabbing Mill	Direct	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
36	7000	0-50-120	700	d.c.	40" Rev. Blooming Mill	Direct	1926	Forged Steel Wheel Co.	Butler, Pa.	W
37	7000	40-80	750	d.c.	54" Rev. Blooming Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
38	7000	50-120	750	d.c.	44" Blooming Mill	Direct	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
39	7000	55	900	d.c.	45" Blooming Mill	Direct	1917	Tenn. Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
40	8000	40-120	700	d.c.	54" Blooming Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
41	8000	240	13200	60 cy.	Interrupted Continuous Blooming Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	G-

SHEET AND TIN PLATE DRIVES

No.	Horse Power	R.P.M.	Voltage	Current	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	250	440	25 cy.	Sheet Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N. Y.	GE
2	300	325–650	220	d.c.	Sheet Mill		1919	Aluminum Co. of America	New Kensington, Pa.	AC
3	300	505	2200	60	20″ Sheet & Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
4	300	505	2200	60	20″ Sheet & Strip Jobbing Mill	Geared	1926	Indiana Rolling Mill Co.	New Castle, Ind.	W
5	350	320	2200	60 cy.	Sheet Mill	Geared	1917	Universal Steel Co.	Bridgeville, Pa.	W
6	350	400–600	220	d.c.	Hot Mill	Geared	1913	Bethlehem Steel Corp.	Lackawanna, N. Y.	CW
7	350	400–600	220	d.c.	Hot Mill	Geared	1913	Bethlehem Steel Corp.	Lackawanna, N. Y.	CW
8	350	485	2200	25	Cont. Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	AC
9	350	485	2200	25	Cont. Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	AC
10	400	360	2300	60	Sheet Mill, Cold Rolls	Geared	1925	Thomas Sheet Steel Co.	Niles, Ohio	GE
11	500	300	2200	60 cy.	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
12	500	300	2200	60 cy.	Sheet Mill		1915	U. S. A uminum Co.	New Kensington, Pa.	AC
13	500	300	2200	60 cy.	Sheet Mill		1915	U. S. Aluminum Co.	New Kensington, Pa.	AC
14	500	450	2200	60 cy.	Sheet Mill	Geared	1915	American Brass Co.	Torrington, Conn.	GE
15	500	600	2200	60	Continuous Sheet Mill	Geared	1926	American Rolling Mill Co.	Ashland, Ky.	W
16	600	290	2200	25	60″ Sheet Jobbing Mill	Geared	1927	Allanwood Iron & Steel Co.	Conshochocton, Pa.	W
17	600	300	2200	60 cy.	Sheet Mill	Geared	1917	Universal Rolling Mill Co.	Bridgeville, Pa.	AC
18	700	320	2200	60 cy.	Sheet and Jobbing Mill	Direct	1917	Carbon Steel Co.	Pittsburgh, Pa.	W
19	750	94	2200	25 cy.	Sheet Mill	Rope	1912	West Penn Steel Co.	Brackenridge, Pa.	GE
20	750	250	2200	60 cy.	Tin Mill	Geared	1914	Weirton Steel Co.	Weirton, W. Va.	W
21	800	214	2200	25 cy.	Sheet Mill	Geared	1919	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
22	800	214	2200	25 cy.	Sheet Mill	Geared	1919	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
23	800	600	2200	60	Hot & Cold Sheet Mill	Geared	1924	American Nickel Co.	Clearfield, Pa.	GE
24	900	94	2200	25 cy.	Jobbing Sheet Mill	Rope	1910	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
25	900	94	2200	25 cy.	Jobbing Sheet Mill	Rope	1910	Am. Sheet & Tin Plate Co.	Gary, Ind.	GE
26	1000	83	2200	25 cy.	Sheet Mill	Rope	1910	Follansbee Bros.	Follansbee, W. Va.	GE
27	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
28	1000	235	2200	60	Cold Rolled Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
29	1000	240	440	60 cy.	Sheet Mill	Geared	1918	Robertson Iron & Steel Co.	Springfield, Ohio	AC
30	1000	245	2200	25 cy.	30″ Sheet Mill	Rope	1910	American Rolling Mill Co.	Middletown, Ohio	W
31	1000	250	6600	25 cy.	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
32	1000	250	6600	25 cy.	Sheet Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
33	1000	250	6000	25 cy.	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
34	1000	250	6600	25 cy.	Tin Mill	Geared	1919	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
35	1000	250	2200	25 cy.	Sheet Mill	Geared	1920	Otis Steel Co.,	Cleveland, Ohio	AC
36	1000	250	2200	25 cy.	Sheet Mill	Geared	1920	Otis Steel Co.	Cleveland, Ohio	AC
37	1000	252	2200	60 cy.	Sheet Mill	Geared	1920	American Rolling Mill Co.	Zanesville, Ohio	W
38	1000	300	2200	60 cy.	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
39	1000	300	2200	60 cy.	Sheet Mill	Geared	1919	Superior Sheet Steel Co.	Canton, Ohio	GE
40	1000	300	2200	60 cy.	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
41	1000	300	2200	60 cy.	Sheet Mill	Geared	1920	Milwaukee Rolling Mills Co.	Milwaukee, Wis.	GE
42	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
43	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
44	1000	300	2200	60	Sheet Mill	Geared	1925	Sharon Steel Hoop Co.	Sharon, Pa.	CW
45	1000	333	2200	50	36″ Sheet Mill	Geared	1927	Columbia Steel Co.	Torrance, Calif.	GE
46	1000	600	2200	60	Sheet Mill	Geared	1925	American Nickel Corp.	Clearfield, Pa.	GE
47	1150	250	6600	25 cy.	Jobbing Sheet Mill	Geared	1913	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
48	1200	214	2200	25 cy.	Jobbing Sheet Mill	Geared	1913	Otis Steel Co.	Cleveland, Ohio	GE
49	1200	240	2200	60 cy.	Sheet Mill	Geared	1915	Empire Rolling Mills	Cleveland, Ohio	GE
50	1200	240	2200	60 cy.	Sheet Mill	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
51	1200	240	2200	60 cy.	Sheet Mill	Geared	1916	United Alloy Steel Corp.	Canton, Ohio	GE
52	1200	240	2200	60 cy.	Sheet Mill	Geared	1917	United Alloy Steel Corp.	Canton, Ohio	GE
53	1200	240	2200	60 cy.	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
54	1200	240	2200	60 cy.	Sheet Mill	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
55	1200	240	440	25 cy.	26″ Sheet Mill	Rope	1907	Seneca Iron & Steel Co.	Buffalo, N. Y.	W
56	1200	240		60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Company	Canonsburg, Pa.	CW
57	1200	240		60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Company	Canonsburg, Pa.	CW
58	1200	240		60	Hot Sheet Mill	Coupled	1915	Standard Tin Plate Company	Canonsburg, Pa.	CW
59	1200	240		60	Hot Sheet Mill	Coupled	1916	Standard Tin Plate Company	Canonsburg, Pa.	CW
60	1200	240		60	Hot Sheet Mill	Coupled	1916	Standard Tin Plate Company	Canonsburg, Pa.	CW
61	1200	244	2200	25 cy.	Sheet Mill	Geared	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	W
62	1200	244	2200	25 cy.	Sheet Mill	Geared	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	W
63	1200	244	2200	25 cy.	Sheet Mill	Geared	1920	American Rolling Mill Co.	Middletown, Ohio	W
64	1200	244	2200	25 cy.	Sheet Mill	Geared	1920	American Rolling Mill Co.	Middletown, Ohio	W
65	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills Co.	Middletown, Ohio	W
66	1200	244	2200	25	Sheet Mill	Geared	1926	American Rolling Mills Co.	Middletown, Ohio	W
67	1200	277	2200	60	Sheet Mill	Geared	1925	Wheeling Steel Corp.	Wheeling, W. Va.	GE
68	1200	295	6600	60 cy.	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
69	1200	295	6600	60 cy.	Sheet Mill	Coupled	1922	Weirton Steel Co.	Weirton, W. Va.	AC
70	1200	300	4100	60 cy.	Sheet Mill	Geared	1920	Chapman Price Steel Co.	Indianapolis, Ind.	GE
71	1200	300	2200	60 cy.	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
72	1200	300	2200	60 cy.	Sheet Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
73	1200	300	2200	60 cy.	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
74	1200	300	2200	60 cy.	Sheet Mill	Geared	1924	Thomas Sheet Steel Co.	Niles, Ohio	GE
75	1200	352	2200	60 cy.	Sheet Mill	Rope	1917	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
76	1250	250	6600	25 cy.	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
77	1250	250	6600	25 cy.	Hot Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
78	1250	250	6600	25 cy.	Cold Tin Mill	Geared	1924	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
79	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
80	1250	250	6600	25	Hot Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
81	1250	250	6600	25	Cold Tin Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
82	1250	250	6600	25	Sheet Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
83	1400	240	2200	60 cy.	Sheet Mill	Geared	1912	Apollo Steel Co.	Apollo, Pa.	GE
84	1500	187	2200	25 cy.	Sheet Mill	Chain	1914	National Enamel & Stamp. Co.	Granite City, Ill.	AC
85	1500	210	2200	25 cy.	30″ Sheet Mill	Rope	1910	American Rolling Mill Co.	Middletown, Ohio	W
86	1500	234	2200	60 cy.	Sheet Mill	Geared	1915	Canton Sheet Steel Co.	Canton, Ohio	W
87	1500	234	2200	60 cy.	Sheet Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
88	1500	234	2200	60 cy.	Sheet Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
89	1500	234	2200	60 cy.	Sheet Mill	Geared	1919	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
90	1500	240	2200	60 cy.	Sheet Mill	Geared	1922	United Alloy Steel Corp.	Canton, Ohio	GE
91	1500	240	2200	60 cy.	Sheet Mill	Geared	1919	Follensbee Bros.	Toronto, Ohio	AC
92	1500	240	2200	60 cy.	Sheet Mill	Geared	1919	Follensbee Bros.	Toronto, Ohio	AC
93	1500	240	2200	60 cy.	Sheet Mill	Geared	1920	Canton Sheet Steel Co.	Canton, Ohio	AC
94	1500	250	2200	25 cy.	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
95	1500	250	2200	25 cy.	Sheet Mill	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
96	1500	270	2200	60 cy.	Sheet Mill	Geared	1914	Youngstown Sheet & Tube Co.	Warren, Ohio	W
97	1500	295	2200	60 cy.	Sheet Mill	Geared	1924	Kansas City Bolt & Nut Co.	Kansas City, Mo.	AC
98	1500	300	4600	60 cy.	Sheet Mill	Geared	1922	Michigan Steel Corp.	Detroit, Mich.	GE
99	1500	300	4600	60 cy.	Sheet Mill	Geared	1924	Michigan Steel Corp.	Detroit, Mich.	GE
100	1500	360	4000	60 cy.	Sheet Mill	Geared	1923	Pacific Coast Steel Corp.	So.San Francisco,Cal.	GE
101	1500	360	2200	60 cy.	Sheet Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
102	1600	94	2200	25 cy.	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
103	1600	94	2200	25 cy.	Sheet Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
104	1600	94	2200	25 cy.	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
105	1600	94	2200	25 cy.	Sheet Mill	Rope	1913	American Sheet & Tin Plate Co.	Gary, Ind.	GE
106	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
107	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE

SHEET AND TIN PLATE DRIVES—Continued

No.	Horse Power	R.P.M.	Volt-age	Cycle	Type and Size of Mill	Method of Drive	Date of Pur-chase	Name of Plant	Location	Mfgd By
108	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
109	1600	94	2200	25 cy.	Tin Mill	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
110	1600	210	2200	25 cy.	Sheet Mill	Geared	1912	Inland Steel Co.	Indiana Harbor, Ind.	W
111	1600	240	2200	60 cy.	Sheet Mill	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
112	1600	250	440	25 cy.	Sheet Mill	Geared	1914	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
113	1600	270	2200	60 cy.	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Wheeling, W. Va.	W
114	1600	270	2200	60 cy.	Sheet Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
115	1700	214	2200	25 cy.	Sheet Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
116	1700	214	2200	25 cy.	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
117	1700	214	2200	25 cy.	Tin Mill	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
118	1700	214	2200	25 cy.	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
119	1700	214	2200	25 cy.	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
120	1700	214	2200	25 cy.	Tin Mill	Geared	1918	American Sheet & Tin Plate Co.	Gary, Ind.	GE
121	1700	214	2200	25 cy.	Tin Mill	Geared	1919	American Sheet & Tin Plate Co.	Gary, Ind.	GE
122	1700	250	440	25	Hot Sheet Mill	Geared	1925	Seneca Iron & Steel Co.	Buffalo, N. Y.	GE
123	1800	235	2200	60 cy.	Sheet Mill	Geared	1915	Trumbull Steel Co.	Warren, Ohio	W
124	1800	240	2200	60 cy.	Sheet Mill	Geared	1920	Apollo Steel Co.	Apollo, Pa.	GE
125	1800	253	2200	60	Eight Stand Tin Mill	Coupled	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	AC
126	1800	270	2200	60 cy.	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
127	1800	270	2200	60 cy.	Sheet Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
128	1800	295	2200	60	32″ Hot Roll Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Monnessen, Pa.	AC
129	2000	230–460	600	d.c.	Sheet Mill	Geared	1926	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
130	2000	234	2200	60 cy.	Sheet Mill	Geared	1919	Newton Steel Co.	Newton Falls, Ohio	W
131	2000	235	2200	60 cy.	Tin Mill	Geared	1920	Nat. Enameling & Stamping Co.	St. Louis, Mo.	W
132	2000	234	2200	60 cy.	Sheet Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
133	2000	234	2200	60 cy.	Sheet Mill	Geared	1923	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
134	2000	240	2200	60 cy.	Sheet Mill	Geared	1919	Republic Iron & Steel Co.	Niles, Ohio	GE
135	2000	250	6600	25 cy.	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
136	2000	250	6600	25 cy.	Sheet Mill	Geared	1920	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
137	2000	300	2200	60	Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Scottdale, Pa.	GE
138	2000	600	6600	60 cy.	Sheet Mill	Geared	1924	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
139	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
140	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
141	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
142	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
143	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W
144	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tin Plate Co.	Gary, Ind.	W

ROD MILL DRIVES

No.	Horse Power	R.P.M.	Volt-age	Cycle	Type and Size of Mill	Method of Drive	Date of Pur-chase	Name of Plant	Location	Mfgd. By
1	300	300–650	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
2	300	300–650	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
3	300	375	2200	25	10″ Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
4	300	375	2200	25	10″ Rod Mill	Direct	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
5	300	575	2200	60 cy.	Rod Mill	Geared	1923	Standard Underground Cable Co.	Perth Amboy, N. J.	W
6	300	720	2200	60 cy.	Wire Rod Mill.	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
7	350	250	2200	25 cy.	10″ Rod Mill	Direct	1911	Dillworth Porter Co.	Pittsburgh, Pa.	GE
8	360	300–425	230	d.c.	8″ Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
9	360	300–600	230	d.c.	Rod Mill	Direct	1922	United Alloy Steel Corporation	Canton, Ohio	W
10	360	350–500	230	d.c.	7″ Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
11	450	400–650	230	d.c.	Rod Mill	Direct	1913	American Steel & Wire Co.	Worcester, Mass.	W
12	500	600	2200	60	10″ Rod Mill	Geared	1927	Dilworth Porter Co.	Pittsburgh, Pa.	GE
13	600	400	2300	60	10″ Rod Mill	Direct	1927	Copperweld Steel Co.	Glassport, Pa.	GE
14	600	440	2200	60 cy.	10″ Rod Mill	Direct	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
15	600–400	514–300	2200	60 cy.	Rod Mill	Direct	1912	Oliver Iron & Steel Co.	Pittsburgh, Pa.	GE
16	600	514	2300	60	8″ Rod Mill	Direct	1927	Copperweld Steel Co.	Glassport, Pa.	GE
17	600	705	2200	60	10″ Rod Mill	Geared	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC
18	700	1200	6600	60	Wire Rod Mill		1925	Weirton Steel Co.	Weirton, W. Va.	AC
19	800	140–510	600	d.c.	10″ Rod Mill	Direct	1927	American Steel & Wire Co.	Worcester, Mass.	W
20	800	140–510	600	d.c.	10″ Rod Mill	Direct	1927	American Steel & Wire Co.	Worcester, Mass.	W
21	800	257	2200	60 cy.	12″ Rod Mill	Belt	1915	Crucible Steel Co. of America	Harrison, N. J.	GE
22	800	535–750	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
23	800	535–750	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
24	800–363	706–320	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
25	800–363	706–320	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
26	800–363	706–320	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
27	850	650–250	600	d.c.	Rod (Roughing) Mill	Geared	1922	Atlantic Steel Co.	Atlanta, Ga.	W
28	975–325	250–500	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
29	975–510	865–450	600	d.c.	Rod (Finishing) Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
30	1000	720	6600	60	Rod Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
31	1000	720	6600	60	Rod Mill	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
32	1180–955–705	560–450–336	2200	60 cy.	Rod Mill	Belt	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
33	1200	360	2200	60 cy.	Morgan Wr. Rod Mill	Geared	1918	Interstate Iron & Steel Co.	Chicago, Ill.	AC
34	1250	175–400	230	d.c.	Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
35	1250–1000–650	650–500–325	2200	25 cy.	Rod Mill	Belt	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
36	1300	500	6400	25 cy.	Rod (Finishing) Mill	Rope	1910	American Steel & Wire Co.	Birmingham, Ala.	W
37	1500	150	6600	25 cy.	Wire Rod Mill	Coupled	1914	Illinois Steel Co.	Joliet, Ill.	AC
38	1500	234	2200	60 cy.	10″ Rod Mill	Geared	1921	Columbia Steel Co.	Pittsburgh, Cal.	W
39	1500	270	2200	60 cy.	Lamberton Rod Mill	Geared	1915	United Alloy Steel Corporation	Canton, Ohio	W
40	1500	450	2200	60	9″ Rod Mill	Direct	1926	Washburn Wire Co.	Philipsdale, R. I.	W
41	1500	450–550	600	d.c.	Rod Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
42	1500	470–510	230	d.c.	Rod Mill	Direct	1923	John A. Roebling Sons	New York, N. Y.	W
43	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
44	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Company of Canada	Hamilton, Ont.	W
45	1600	500	6600	25 cy.	Rod (Finishing) Mill	Rope	1910	American Steel & Wire Co.	Birmingham, Ala.	W
46	1800	514	2200	60 cy.	Rod Mill	Geared	1923	Columbia Steel Co.	Pittsburgh, Cal.	GE
47	1850	575–221	600	d.c.	Rod Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
48	2000	230–460	600	d.c.	10″ Rod Mill	Geared	1927	American Steel & Wire Co.	Worcester, Mass.	W
49	2360–1880–1440	410–327–250	2200	60 cy.	Rod Mill	Geared	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
50	2400	500	6600	25 cy.	Wire Rod Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
51	2470–1725–1235	430–300–215	2200	25 cy.	Rod Mill	Geared	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
52	2600	81 5	6600	25 cy.	Rod (Roughing) Mill	Geared	1910	American Steel & Wire Co.	Birmingham, Ala.	W
53	2600	368	6400	25 cy.	Rod Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
54	2870–1435	400–200	600	d.c.	10″ Rod Mill	Geared	1922	Wheeling Steel Corporation	Portsmouth, Ohio	GE
55	3000	150	6600	25 cy.	Wire Rod Mill	Coupled	1920	Minnesota Steel Co.	Steelton, Minn.	AC
56	3000	180–370	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
57	3000	450	6600	60	Rod Mills	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
58	3000	450	6600	60	Rod Mills	Geared	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
59	4000	375	6600	25	10″ Cont. Wire Rod Mill	Geared	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE

PIERCING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
1	300	300	2200	60	Piercing Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
2	300	300	2200	60	Piercing Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
3	300	720	4150	60	Piercing Mill	Geared	1927	Public Service Prod. Co.	Plainfield, N. J.	GE
4	400	600	440	60 cy.	Billet Piercing Machine	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
5	400	600	400	60 cy.	Piercing Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
6	450	720	2200	60 cy.	Piercing Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
7	500	360	2200	60 cy.	Billet Piercing Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
8	500	500	2200	25	Continuous Tube Mill	Coupled	1915	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
9	600	485	550	25 cy.	Piercing Mill	Geared	1915	Baltimore Tube Co.	Baltimore, Md.	W
10	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
11	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
12	650	225–400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
13	700	150	2200	60 cy.	Piercing Mill	Rope	1916	Ohio Seamless Tube Co.	Shelby, Ohio	GE
14	750–750	235–325	230	d.c.	Piercing Mill	Geared	1914	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	GE
15	750	353	2200	60 cy.	Piercing Mill	Direct	1915	National Tube Co.	Elwood City, Pa.	W
16	750	353	2200	60 cy.	Piercing Mill	Direct	1915	National Tube Co.	Elwood City, Pa.	W
17	750	353	2200	60 cy.	Piercing Mill	Direct	1915	National Tube Co.	Elwood City, Pa.	W
18	800	200–300	500	d.c.	Piercing Mill	Rope	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
19	800	200–300	500	d.c.	Piercing Mill	Direct	1913	Pittsburgh Steel Products Co.	Monessen, Pa.	W
20	800	250	2200	60 cy.	Piercing Mill	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
21	1000	375	6600	25	Piercing Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
22	1000	450	2200	60 cy.	Piercing Mill	Geared	1918	Winchester Rep. Arms Co.	New Haven, Conn.	AC
23	1200	200	2200	60 cy.	Piercing Mill	Rope	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
24	1600	600	2200	60 cy.	Piercing Mill	Geared	1921	Standard Seamless Tube Co.	Pittsburgh, Pa.	GE
25	2500	247	6600	25 cy.	Piercing Mill	Geared	1923	Gary Tube Company	Gary, Ind.	W
26	2500	247	6600	25	Seamless Tube Mill	Geared	1925	Gary Tube Company	Gary, Ind.	W
27	2500	257	2200	60	Piercing Mill	Geared	1925	Globe Steel Tube Co.	Milwaukee, Wis.	AC
28	3000	40–100	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
29	3000	125–200	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
30	3000	250	6600	25	Piercing Mill	Geared	1927	National Tube Co.	Lorain, Ohio	AC
31	3000	250	6600	25	Piercing Mill	Geared	1927	National Tube Co.	Lorain, Ohio	AC
32	3000	250	6600	25	Piercing Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
33	3000	250	6600	25	Piercing Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
34	3500	600	2200	60	Piercing Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
35	5000	240	2200	60	51″ Piercing Mill	Direct	1927	Standard Seamless Tube Co.	Economy, Pa.	GE

TUBE ROLLING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	175–300	230	d.c.	Tube Mill	Direct	1927	Babcock & Wilcox	Beaver Falls, Pa.	W
2	300	175–300	230	d.c.	Tube Mill	Direct	1927	Babcock & Wilcox	Beaver Falls, Pa.	W
3	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
4	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
5	300	300	230	d.c.	Steel Mill	Geared	1925	National Tube Co.	Lorain, Ohio	AC
6	300	345–500	500	d.c.	Tube Rolling Mill	Geared	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
7	300	350	2200	60 cy.	Seamless Tube Co.	Geared	1915	Timken Roller Bearing Co.	Canton, Ohio	W
8	300	350	2200	60 cy.	Tube Rolling Mill	Geared	1919	Timken Roller Bearing Co.	Canton, Ohio	W
9	300	350–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
10	300	435	230	d.c.	12″ Pipe Mill	Coupled	1910	A. M. Byers Company	Pittsburgh, Pa.	CW
11	300	435	230	d.c.	12″ Pipe Mill	Coupled	1910	A. M. Byers Company	Pittsburgh, Pa.	CW
12	300	450	220	30 cy.	Lap Welding Rolls	Geared	1923	Spang Chalfant Co.	Etna, Pa.	GE
13	300	450	2200	60 cy.	Cross Rolls in Tube Mill	Geared	1924	Standard Seamless Tube Co.	Economy, Pa.	GE
14	300	450	2200	60 cy.	Cross Rolls in Tube Mill	Geared	1924	Standard Tube Co. Seamless	Economy, Pa.	GE
15	300	500	220	25	Tube Mill	Geared	1915	Republic Iron & Steel Co.	Youngstown, Ohio	GE
16	300	500	550	25 cy.	Tube Rolling Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
17	300	500	550	25 cy.	Tube Rolling Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
18	300	500	230	d.c.	Pipe Mill—Wld. Rolls	Geared	1925	Central Tube Co.	Economy, Pa.	GE
19	300	514	220	60 cy.	Tube Mill	Geared	1914	Detroit Seamless Tube Co.	Detroit, Mich.	GE
20	300	514	440	60 cy.	Tube Mill	Geared	1914	Detroit Seamless Tobe Co.	Detroit, Mich.	GE
21	300	514	220	60 cy.	Tube Mill	Geared	1918	Detroit Seamless Tube Co.	Detroit, Mich.	AC
22	300	600	2200	60 cy.	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
23	300	600	2200	60 cy.	Tube Mill	Geared	1922	Weldless Tube Co.	Wooster, Ohio	GE
24	340	85	230	d.c.	Welding Rolls	Coupled	1906	National Tube Company	McKeesport, Pa.	CW
25	350	350	2200	60	Seamless Tube Mill	Geared	1927	Timken Roller Bearing Co.	Canton, Ohio	W
26	350–350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
27	350–350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Co.	Lorain, Ohio	GE
28	350	435	2200	60 cy.	Pipe Welding Roll Mill	Geared	1919	Wheeling Steel Corporation	Steubenville, Ohio	W
29	400	75	230	d.c.	Welding Rolls	Coupled	1906	National Tube Company	McKeesport, Pa.	CW
30	400	300	550	25	Tube Mill	Geared	1927	Bethlehem Steel Co.	Sparrows Pt. Md.	GE
31	400	300	550	25	Tube Mill	Geared	1927	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
32	400	350	230	d.c.	Tube Reeling Drive	Geared	1927	National Tube Co.	Lorain, Ohio	AC
33	400	350	230	d.c.	Tube Reeling Drive	Geared	1927	National Tube Co.	Lorain, Ohio	AC
34	400	375	220	25 cy.	Tube Mill—Chill Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
35	400	375	220	25 cy.	20″ Tube Mill—Wld.Rolls	Geared	1909	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
36	400	375	220	25 cy.	Tube Mill—Wld. Rolls	Geared	1917	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
37	400	375	220	25 cy.	Tube Mill—Wld. Rolls	Geared	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
38	400	375	220	25 cy.	Tube Mill—Wld. Rolls	Geared	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
39	400	400	440	50 cy.	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
40	400	400	440	50 cy.	Lap Welding Rolls	Geared	1923	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
41	400	435	400	60 cy.	Pipe Mill	Geared	1918	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
42	400	500	6600	25	Tube Sizing Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
43	400	600	2300	60	Tube Welding Mill	Geared	1927	South Chester Tube Co.	Chester, Pa.	GE
44	400	600	440	60 cy.	Tube Mill	Geared	1920	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
45	450	300	230	d.c.	10″ Tube Mill	Coupled	1911	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
46	450	720	2200	60	Seamless Tube Co.	Geared	1927	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
47	500	234	2200	60	Tube Mill	Coupled	1922	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
48	500	234	2200	60	Tube Mill	Coupled	1922	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
49	500	250	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
50	500	250	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW
51	500	300–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
52	500	400–800	230	d.c.	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
53	500	400–800	230	d.c.	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
54	500	450	2200	60 cy.	Tube Mill	Geared	1916	Ohio Seamless Tube Co.	Shelby, Ohio	GE
55	500	450	2200	60 cy.	Tube Mill	Geared	1919	Ohio Seamless Tube Co.	Shelby, Ohio	GE
56	500	500	550	25 cy.	Tube Rolling Mill	Geared	1917	Baltimore Tube Co.	Baltimore, Md.	W
57	500	600	2200	60	Reducing Pipe Mill	Geared	1925	Ohio Seamless Tube Co.	Shelby, Ohio	GE
58	500	600	4600	60	Reducing Mill	Geared	1926	Detroit Seamless Steel Tube Co.	Detroit, Mich.	AC
59	600	300	2200	60	Tube Mill	Coupled	1917	Pittsburgh Steel Products Co.	Monessen, Pa.	CW
60	600	300	2200	60	Tube Mill	Coupled	1918	Pittsburgh Steel Products Co.	Allenport, Pa.	CW

TUBE ROLLING MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
61	600	360	2200	60 cy.	Tube Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
62	700	300–400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
63	750	295	6600	25 cy.	Seamless Mill	Geared	1923	Gary Tube Co.	Gary, Ind.	W
64	750	353	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
65	750	353	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
66	750	353	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
67	800	107	6600	25	Tube Rolling Mill	Coupled	1925	National Tube Co.	Lorain, Ohio	AC
68	800	109	2200	60 cy.	2—21″ Rolls	Coupled	1924	Globe Steel Tube Co.	Milwaukee, Wis.	AC
60	800	225	2200	60 cy.	Roughing Mill Tube	Geared	1916	Standard Seamless Tube Co.	Economy, Pa.	GE
70	1000	240	220	60 cy.	Tube Mill	Geared	1919	Globe Seamless Tube Co.	Milwaukee, Wis.	AC
71	1000	240	2200	60	Tube Mill	Rope & Direct	1917	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	CW
72	1000	300–400	230	d.c.	Lap Welding Mill	Coupled Rope	1923	Gary Tube Co.	Gary, Ind.	AC
73	1200	257	4600	60 cy.	Tube Mill	Direct & Coupled	1918	Detroit Seamless Tube Co.	Detroit, Mich.	GE
74	1200	294	2200	60 cy.	Tube Rolling Mill	Geared	1915	National Tube Co.	Ellwood City, Pa.	W
75	1500	62–½	6600	25	Tube Rolling Mill	Coupled	1926	Gary Tube Co.	Gary, Indiana	AC
76	1500	62½	6600	25	Tube Mill	Direct	1927	National Tube Co.	Lorain, Ohio	AC
77	1500	375	6600	25	Tube Rolling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
78	1600	600	2200	60	Tube Rolling Mill	Geared	1925	Standard Seamless Tube Co.	Economy, Pa.	GE
79	1800	250	2200	60 cy.	Tube Rolling Mill	Direct	1915	National Tube Co.	Ellwood City, Pa.	W
80	1800–1350	300	2200	60	Tube Rolling Mill	Geared	1927	National Tube Co.	Elwood City, Pa.	GE

STRIP AND HOOP MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300–225–165	335–225–165	6600	25 cy.	12″ Hot Strip Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
2	300	360	2200	60	10″ Strip Mill	Coupled	1923	Pittsburgh Steel Company	Glassport, Pa.	CW
3	300	600	2200	60 cy.	10″ Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
4	350	242	2200	25 cy.	Cold Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
5	350	345	440	60 cy.	21″ Plate (Cold Roll.) Mill	Geared	1910	Oliver Iron & Steel Co.	Wilson Station, Pa.	W
6	350	450–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
7	350	490	6400	25 cy.	24″ Flat (Edging) Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
8	400–400	275–500	550	d.c.	12″ Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
9	400	360	2200	60	8″ Strip Mill	Coupled	1923	Pittsburgh Steel Company	Glassport, Pa.	CW
10	450	440–350	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
11	450	450–600	230	d.c.	12″ Cold Strip (2 Tandem Stds. Roughing) Mill	Geared	1915	Superior Steel Co..	Carnegie, Pa.	W
12	450	450–600	230	d.c.	12″ Cold Strip (2 Tandem Stds. Finishing) Mill	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
13	450	700–595	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
14	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
15	450	730	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
16	500–500	250–325	230	d.c.	8″ Hoop Mill	Direct	1909	Atlantic Steel Co.	Atlanta, Ga.	GE
17	500	250–500	230	d.c.	9″ Hoop (Finishing) Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
18	500–500	400–600	230	d.c.	Hoop Mill	Geared	1920	Atlantic Steel Co.	Atlanta, Ga.	GE
19	500	450	440	60	Hoop Mill	Geared	1912	Carnegie Steel Company	Pittsburgh, Pa.	CW
20	550	320–206	2200	60 cy.	10″ Hoop Mill	Direct	1917	Atlantic Steel Co.	Atlanta, Ga.	W
21	600–600	150–250	575	d.c.	6″ Hot Strip Mill	Direct	1913	American Steel & Wire Co.	Cleveland, Ohio	GE
22	600	185–470	600	d.c.	10″ Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
23	600–600	225–425	550	d.c.	12″ Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
24	600	270–635	600	d.c.	10″ Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
25	600	390	440	60 cy.	Cold Strip Mill	Geared	1917	Stanley Works	New Haven, Conn.	W
26	600–600	720–360	6600	60 cy.	Hot Strip Mill	Geared	1916	Weirton Steel Co.	Weirton, W. Va.	AC
27	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
28	700	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
29	700	875	2200	60 cy.	Cont. Hoop (Rough.) Mill	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
30	700	875	2200	60 cy.	Cont. Hoop (Inter.) Mill	Geared	1920	Connors Steel Co.	Birmingham, Ala.	W
31	720	395–825	600	d.c.	10″ Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
32	720	480–1000	600	d.c.	10″ Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
33	750	257	2200	60	10″ Strip Mill	Coupled	1923	Pittsburgh Steel Company	Glassport, Pa.	CW
34	750–625–460	360–300–220	6600	25 cy.	12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
35	750–750	360–860	600	d.c.	14″ Cont. Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
36	750–600–400	473–375–278	6600	25 cy.	12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
37	770–700–630	540–490–440	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
38	800–800	200–400	600	d.c.	14″ Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
39	800–800	214–167	6600	25 cy.	16″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
40	800–800	231–462	600	d.c.	14″ Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
41	800	250–500	230	d.c.	14″ and 9″ Hoop Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
42	800	250–750	600	d.c.	14″ Hot Strip Mill	Direct	1927	Trumbull Steel Co.	Warren, Ohio	GE
43	800–800	256–512	600	d.c.	14″ Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
44	800	257	2200	60	Hot Strip Mill	Geared	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
45	800–800	275–550	600	d.c.	14″ Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
46	800–800	315–210	575	d.c.	6″ Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
47	800	350–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
48	800	350–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
49	800–800	390–260	575	d.c.	6″ Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
50	800	435	2200	60	No. 2 Hoop Mill	Geared	1925	Connors Steel Co.	Birmingham, Ala.	W
51	800	505	2200	60	9″ Hot Strip Mill	Direct	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
52	800	585–292	6600	60 cy.	16″ Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
53	800–800–800	720–600–480	2200	60 cy.	12″ Hot Strip Mill	Geared	1920	Canadian Electric Steel Co.	Montreal, Canada	GE
54	900–710–620	325–257–182	2300	60 cy.	10″ Hoop Mill	Geared	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
55	1000	50–100	600	d.c.	24″ Flat (Rough.) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
56	1000	214–150	6400	25 cy.	24″ Flat (Finishing) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
57	1000	277	2200	60	Strip Mill	Geared	1919	American Tube & Stamping Co.	Bridgeport, Conn.	GE
58	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
59	1000	435	2200	60	Hot Strip Mill	Geared	1924	American Tube & Stamping Co.	Bridgeport, Conn.	W
60	1000	705	2200	60 cy.	16″ Strip Mill	Geared	1920	Central Steel Co.	Massillon, Ohio	W
61	1125–900–675	312–250–187	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
62	1200	200–400	230	d.c.	14″ Band Hoop Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
63	1200	200–400	230	d.c.	14″ Band Hoop Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
64	1200–1200–1200	450–360–270	2300	60 cy.	9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
65	1200–1200–1200	450–360–270	2300	60 cy.	9″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
66	1200–1200–1200	450–360–270	2300	60 cy.	9″ Hot Strip Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
67	1200–1000–800	450–375–300	6600	25 cy.	8″ Hoop Mill, No. 8	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
68	1200–1000–800	450–375–300	6600	25 cy.	8″ Hoop Mill, No. 9	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
69	1200–1000–800	450–375–300	6600	25 cy.	18″ Band Mill, No. 13	Geared	1919	Carnegie Steel Co.	Youngstown, Ohio	GE
70	1200	505–303	6600	60 cy.	16″ Band Mill	Geared	1919	Weirton Stee Co.	Weirton, W. Va.	W
71	1200	590–450	2200	60 cy.	Duo and Bull Head Mill	Geared	1916	Central Steel Co.	Massillon, Ohio	W

STRIP AND HOOP MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
72	1200	590	2200	60 cy.	22″ Strip Mill	Geared	1918	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
73	1250-1250	175-350	600	d.c.	14″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
74	1250-1250	175-350	600	d.c.	14″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
75	1400	450-550	500	d.c.	12″ Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
76	1500	125-250	230	d.c.	14″ Band Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
77	1500	125-250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
78	1500	125-250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
79	1500	198-100	600	d.c.	10″ Strip Mill	Rope & Direct	1926	LacLede Steel Co.	Alton, Ill.	W
80	1500	200	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
81	1500	200-400	600	d.c.	20″-16″ Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
82	1500	257	2200	25 cy.	10″ Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
83	1500-1500	280-420	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
84	1500-1500	280-420	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
85	1500-1500	280-420	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
86	1500	360	2200	60 cy.	10″ Hot Strip Mill	Direct	1919	Superior Steel Co.	Carnegie, Pa.	GE
87	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
88	1500	450	6600	60	Strip Sheet Mill	Geared	1926	Weirton Steel Co.	Weirton, W. Va.	GE
89	1500-1500-1200	450-360-270	2300	60 cy.	16″ Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
90	1500-1200-900	468-375-281	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
91	1500	505	6600	60 cy.	16″ Hoop and Band Mlil	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
92	1500	514	6600	60 cy.	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
93	1500-1500	514-237	6600	60 cy.	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
94	1500	514	6600	60 cy.	Hot Strip Mill	Geared	1924	Weirton Steel Co.	Weirton, W. Va.	AC
95	1500-1500	514-237	6600	60 cy.	Hot Strip Mill	Geared	1917	Weirton Steel Co.	Weirton, W. Va.	AC
96	1500	705	2200	60 cy.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
97	1500	705	2200	60 cy.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
98	1500	705	2200	60	20″-16″ Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
99	1600	440-500-540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
100	1600	440-500-540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
101	1600	490	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
102	1600	705	2200	60	9″ Hot Strip Mill	Geared	1926	West Leechburg Steel Co.	West Leechburg, Pa.	W
103	1650-1205	235-187.5	6600	25 cy.	20″ Hot Strip Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
104	1700-1700	90-140	600	d.c.	14″ Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
105	1700-1700	90-205	600	d.c.	14″ Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
106	1750	100-200	500	d.c.	12″ Spring Strip Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
107	1800-1800	115-230	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
108	1800-1800	115-230	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
109	1800-1800	115-230	600	d.c.	20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
110	1800	125-250	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
111	1800	125-250	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
112	1800	165-350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
113	1800	165-350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
114	1800	185-370	600	d.c.	20″-16″ Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
115	1800	185-370	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
116	1800	185-370	600	d.c.	20″-16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
117	1800	214	2200	25 cy.	6″ Hot Strip Mill	Rope	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
118	1800-1500-1200	240-200-160	2300	60 cy.	10″ Hoop Mill	Belt	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
119	1800-1500-1200	450-375-300	6600	25 cy.	10″ Hoop Mill, No. 11	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
120	1800	500	6600	25 cy.	20″ Hot Strip Mill	Geared	1922	Otis Steel Co	Cleveland, Ohio	GE
121	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
122	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
123	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
124	2000	200-400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
125	2000	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
126	2000	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
127	2000-1700	210-680	600	d.c.	14″ Continuous Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
128	2000-2000-1600	450-360-270	2200	60 cy.	16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
129	2000-2000-1600	450-360-270	2200	60 cy.	16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
130	2000-2000-1600	450-360-270	2200	60 cy.	16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
131	2000-1600-1200	625-500-375	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
132	2000-1600-1200	625-500-375	6600	25	14″ Bar Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
133	2100-2100	150-310	600	d.c.	14″ Cont. Strip Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
134	2100-1600	150-460	600	d.c.	14″ Cont. Strip Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
135	2200-2000-1800	275-250-225	6600	25	18″ Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
136	2500	187.5	6600	25	18″ Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
137	2500	187.5	6600	25	18″ Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
138	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
139	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
140	2500	200-400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
141	2500	352-176	6600	60 cy.	16″ Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
142	2750-2240-1750	262-214-167	6600	25 cy.	12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
143	3000	125	6400	25 cy.	20″ Flat Mill	Coupled	1916	American Steel & Wire Co.	Cleveland, Ohio	AC
144	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
145	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
146	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
147	3000	180-360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
148	3000-3000	200-360	600	d.c.	14″ Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
149	3000-2500-2000	300-250-200	6600	25 cy.	18″ Band Mill, No. 13	Direct	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
150	3000-2500-2000	300-250-200	6600	25 cy.	12″ Hoop Mill, No. 13	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
151	5000	70-150	900	d.c.	27″ Rev. Hot Strip Mill	Direct	1926	Columbia Steel Co.	Butler, Pa.	GE
152	5000-4000-3000	450-360-270	2200	60	16″ Hot Strip Mill	Geared	1925	Trumbull Steel Co.	Warren, Ohio	GE
153	5500-4400-3400	170-136-105	6600	25 cy.	20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE

MULTI-SPEED DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300-300-150	600-400-300	440		Bar Mill	Chain	1916	Vulcan Crucible Steel Co.	Aliquippa, Pa.	GE
2	350-350	150-100	6600		12″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
3	350-350	375-214	6600		9″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
4	400-225	600-300	550		Bar Mill	Geared	1909	Ludlum Steel Co.	Watervliet, N. Y.	GE
5	400-265	875-585	2200	60 cy.	Bar Mill	Geared	1913	Old Dominion Iron & Nail Co.	Richmond, Va.	W
6	450-360	870-695	2200	60 cy.	10″ Merchant Mill	Geared	1918	Cleveland Hardware Co.	Cleveland, Ohio	W
7	450-360	875-700	2200	60 cy.	9″ Merchant Mill	Geared	1915	National Lock Washer Co.	Riverside, N. J.	W
8	475-350	240-181	440	25 cy.	10″ Merchant Mill	Direct	1914	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
9	485-360	870-695	2200	60 cy.	10″ Merchant Mill	Geared	1915	Old Dominion Iron & Nail Co.	Richmond, Va.	W
10	500	730-485	2200	50 cy.	8″ Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
11	500-250	750-375	3000		Merchant Mill	Geared	1923	Consolidated Rolling Mills	Mexico City, Mex.	GE
12	500-400	775-585	550	40 cy.	10″ Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
13	500-400	875-700	550	60 cy.	10″-14″ Merchant Mill	Geared	1916	The Texas Steel Co.	Fort Worth, Texas	W

MULTI-SPEED DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
14	550–360	875–585	2200	60 cy.	12″ Merchant Mill	Geared	1917	Norfolk & Western Railroad	Roanoke, Va.	W
15	575–575	375–250	6600		8″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
16	575–575	300–214	6600		10″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
17	600–600	214–93	6600		12″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
18	600–300	600–300	550	60	9″ Bar Mill No. 2	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
19	800–800	214–167	6600		16″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
20	800–400	450–225	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Mont.	GE
21	800–400	600–300	550		Bar Mill	Geared	1917	Ludlum Steel Co.	Watervliet, N. Y.	GE
22	800–363	706–320	600		10″ Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
23	800	730–485	2200	50 cy.	12″ Merchant Mill	Geared	1919	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	W
24	800–800	900–720	2200		9″ Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
25	800–800	900–720	2200		9″ Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
26	800	875–700	2200	60 cy.	16″ Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
27	850–850	214–187	6600		10″ Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
28	850–850	214–187	6600		10″ Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
29	900–900	214–150	2200		12″ Merchant Mill	Direct	1910	Algoma Steel Co.	Saulte Ste. Marie, Can.	GE
30	1000–400	257–128	550	60	9″ Bar Mill No. 1	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
31	1100–1500	91	2200	25 cy.	84″ Plate (Fin.) Mill	Direct	1910	American Sheet & Tin Plate Co.	Gary, Ind.	W
32	1300–1300	214–187	6600		10″ Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	GE
33	1800–1800	250–125	6600		22″ Merchant Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
34	1800–1350	300	2200	60	Tube Rolling Mill	Geared	1927	National Tube Co.	Ellwood City, Pa.	GE
35	2000	163–113	6600	25 cy.	10″ Merchant Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	W
36	2500	113–91	6600	25 cy.	12″ Merchant Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	W
37	6500–4500	107–53	6600		60″ 3-High Univ. plate Mill	Direct	1909	Illinois Steel Co.	Gary, Ind.	GE

MERCHANT MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	175–225	600	d.c.	10″ Merchant Mill	Direct	1926	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
2	300–300	187.5–112.5	2200	25 cy.	12″ Merchant Mill	Direct	1914	Bethlehem Stee Co.	Lebanon, Pa.	GE
3	300–300	187.5–112.5	2200	25 cy.	12″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
4	300	257	2200	60	Merchant Mill		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
5	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
6	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
7	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
8	300–300	300–180	2200	25 cy.	10″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
9	300	300	2200	60	Merchant Mill		1917	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	CW
10	300–300	315–630	230	d.c.	8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
11	300	350–500	230	d.c.	Merchant Mill	Coupled	1915	Buffalo Bolt Company	N. Tonawanda, N. Y.	CW
12	300	365	2200	25 cy.	8″ Merchant Mill	Direct	1909	Bethlehem Steel Co.	Johnstown, Pa.	W
13	300	440	2200	60 cy.	Merch. (Roughing) Mill	Coupled	1923	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
14	300	450	2200	60 cy.	8″ Merchant Mill		1917	Llewellyn Iron Works	Los Angeles, Cal.	GE
15	300–300	500–300	2200	25 cy.	9″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
16	300–300	500–300	2200	25 cy.	8″ Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
17	300	500	2080	25 cy.	9″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
18	300–150	590–292	2200	60 cy.	9″ Merchant (Fin.) Mill	Geared	1920	Cleveland Hardware Co.	Cleveland, Ohio	W
19	300	600	2200	60 cy.	Merchant Mill	Geared	1916	Tennessee Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
20	300	720	440	60 cy.	14″ Merchant Mill	Geared	1913	Bourne Fuller Co.	Cleveland, Ohio	GE
21	300	720	440	60 cy.	12″ Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
22	300	750	3000	50 cy.	Merchant Mill	Geared	1923	Cons. Rolling Mills Co.	Mexico City, Mex.	GE
23	300–200	920–360	220	d.c.	Merchant Mill	Direct	1919	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
24	350–350	150–100	6600	25 cy.	12″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
25	350	200–300	250	d.c.	9″ Merchant Mill	Direct	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
26	350–350	240–480	240	d.c.	10″ Merchant Mill	Direct	1923	LaClede Steel Co.	St. Louis, Mo.	GE
27	350	250–325	230	d.c.	9″ Merchant Mill	Direct	1921	Wayne Steel Co.	Erie, Pa.	W
28	350–235	300–200	6600	25 cy.	Merchant Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
29	350–350	360–240	240	d.c.	10″ Merchant Mill	Direct	1911	LaClede Steel Co.	St. Louis, Mo.	GE
30	350–350	375–214	6600	25 cy.	9″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
31	350	480	2200	25 cy.	12″ Roughing Stand Mill	Geared	1923	Halcomb Steel Co.	Syracuse, N. Y.	W
32	350	420	2200	50 cy.	Merchant Mill	Geared	1919	Southern California Iron & SteelCo.	Los Angeles, Cal.	W
33	350	524–850	230	d.c.	18″ Blading Mill	Geared	1924	W. E. & M. Co.	South Phila. Works	W
34	350	580	2200	60 cy.	Merchant Mill	Geared	1916	Copper Clad Steel Co.	Pittsburgh, Pa.	W
35	350	590	2200	60 cy.	12″ Merchant Mill	Geared	1918	Indianapolis & Eastern TractionCo.	Indianapolis, Ind.	W
36	350	700	2200	60 cy.	Merchant Mill	Geared	1918	Kilby Car & Foundry Co.	Anniston, Ala.	W
37	400	200–300	230	d.c.	9″ Merchant Mill	Direct	1914	United Alloy Steel Corp.	Canton, Ohio	W
38	400	210–350	230	d.c.	Merchant Mill		1915	Buffalo Bolt Company	N. Tonawanda, N. Y.	CW
39	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
40	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
41	400	240–721	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
42	400	240–721	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
43	400–400	250–500	230	d.c.	10″ Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
44	400	300	2200	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
45	400	300	2200	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
46	400	300	2500	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
47	400	300	2200	25 cy.	Merchant Mill	Rope	1909	American Steel & Wire Co.	Cleveland, Ohio	GE
48	400–500	300–600	600	d.c.	9″ Finishing Mill	Geared	1921	Driver Harris Co.	Harrison, N. J.	W
49	400	385	550	40 cy.	22″ Puddle Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
50	400	400–450	220	d.c.	8″ Merchant Mill	Direct	1911	Illinois Steel Co.	Milwaukee, Wis.	W
51	400	485	440	25 cy.	9″ Merchant Mill	Geared	1915	Hess Steel Corporation	Baltimore, Md.	W
52	400	480	440	25	Merchant Mill	Geared	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	CW
53	400	585	4000	60 cy.	14″ Merchant Mill	Geared	1922	Calumet Steel Co.	Chicago, Ill.	W
54	400	600	440	60 cy.	12″ Merchant Mill	Geared	1919	The Stanley Works	New Britain, Conn.	GE
55	450	211–422	600	d.c.	9″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
56	450	211–422	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
57	450	354–230	2200	60 cy.	8″ Merchant Mill	Direct	1919	Bourne-Fuller Co.	Cleveland, Ohio	W
58	450	440	2200	60 cy	Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
59	450	450	2080	60 cy.	18″ Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
60	450	450	2080	60 cy.	12″ Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
61	450	585	2200	50 cy.	14″ Merchant Mill	Geared	1918	Columbia Steel Co.	Los Angeles, Cal.	W
62	450	730–490	4000	25 cy.	10″ Merchant Mill	Geared	1917	Atlas Steel Corporation	Dunkirk, N. Y.	W
63	450–360	870–695	2200	60 cy.	10″ Merchant Mill	Geared	1913	Cleveland Hardware Co.	Cleveland, Ohio	W
64	450–360	875–700	2200	60 cy	9″ Merchant Mill	Geared	1915	National Lock Washer Co.	Riverside, N. J.	W
65	475–350	240–181	440	25 cy.	10″ Merchant Mill	Direct	1914	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
66	485–360	870–695	2200	60 cy.	10″ Merchant Mill	Geared	1915	Old Dominion Iron & Nail Co.	Richmond, Va.	W
67	500	88	6600	25 cy.	16″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
68	500–385–250	130–100–65	440	25 cy.	14″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
69	500	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
70	500	150–225	250	d.c.	12″ Merchant Mill	Direct	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
71	500	150–550	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE

MERCHANT MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
71	500	175–350	250	d.c.	12″ Merchant Mill	Direct	1926	Pittsburgh Cruc'ble Steel Co.	Midland, Pa.	GE
72	500	184	2200	25 cy.	12″ Merchant Mill	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
73	500	184	2200	25 cy.	16″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
74	500	190	230	d.c.	18″ Tandem Mer. (Roughing) Mill	Rope	1910	Sharon Steel Hoop Co.	Sharon, Pa.	GE
75	500	200–400	250	d.c.	10″ Cont. Rolling Mill	Coupled	1925	Republic Iron & Steel Co.	Youngstown, Ohio	AC
76	500–330	242–161	440	25 cy.	16″ and 10″ Merchant Mill	Direct & Rope	1913	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
77	500	244	2200	25 cy.	10″ Merchant Mill	Direct	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
78	500	250–350	600	d.c.	9″ Merchant Mill	Direct	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
79	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
80	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
81	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
82	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
83	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
84	500	267–800	230	d.c.	Merchant Mill	Geared	1927	Allegheny Steel Co.	Breckenridge, Pa.	GE
85	500	292	4000	60 cy.	8″ Merchant Mill	Direct	1920	Calumet Steel Co.	Chicago, Ill.	W
86	500	320	2200	60 cy.	12″ Merchant Mill	Geared	1919	Baltimore & Ohio Railroad	Cumberland, Md.	W
87	500–500	327–200	440	60 cy.	9″ Merchant Mill	Direct	1913	Union Rolling Mills Co.	Cleveland, Ohio	GE
88	500	360	2200	25 cy.	8″ Merchant Mill	Direct	1912	Bethlehem Steel Co.	Johnstown, Pa.	W
89	500	435	440	60 cy.	8″ Merchant Mill	Rope	1911	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
90	500	435	440	60 cy.	8″ Merchant Mill	Rope	1912	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
91	500	435	440	60 cy.	8″ Merchant Mill	Rope	1912	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
92	500	435	440	60 cy.	9″ Merchant (Fin.) Mill	Belted	1914	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
93	500	435	440	60 cy.	10″ Merchant (Fin.) Mill	Belted	1914	Carnegie Steel Co., Painter Mill	Pittsburgh, Pa.	W
94	500	435	2200	60 cy.	Merchant Mill	Geared	1916	Seymour Manufacturing Co.	Waterbury, Conn.	W
95	500	480–250	230	d.c.	Merchant Mill	Coupled	1923	Buffalo Bolt Company	N. Tonawanda, N. Y.	CW
96	500	450	2300	60 cy.	Merchant Mill	Geared	1916	Pacific Coast Steel Co.	San Francisco, Cal.	GE
97	500	487	6600	25 cy.	8″ Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
98	500–500–500	500–375–265	2200	25 cy.	10″ Merchant Mill	Direct & Belt	1916	Donner Steel Co.	Buffalo, N. Y.	GE
99										
100	500	500	2300	25 cy.	18″ Merchant Mill	Geared	1919	Halcomb Steel Co.	Syracuse, N. Y.	GE
101	500	575–865	2200	60 cy.	10″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
102	500	575–865	2200	60 cy.	10″ Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
103	500	600	2200	60 cy.	Merchant Mill	Geared	1923	Taunton-New Bedf'd Cop. Co.	Taunton, Mass.	GE
104	500–330	730–485	2200	50 cy.	8″ Merchant Mill	Geared	1919	Southern California Iron & SteelCo.	Los Angeles, Cal.	W
105	500–250	750–375	3000	50 cy.	Merchant Mill	Geared	1923	Consolidated Rolling Mills Co.	Mexico City, Mex.	GE
106	500–400	775–585	550	40 cy.	10″ Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
107	500	870	2200	60 cy.	16″ Merchant Mill	Geared	1919	McConway Torley Co.	Pittsburgh, Pa.	W
108	500–400	875–700	550	60 cy.	10″ & 14″ Merchant Mill	Geared	1916	The Texas Steel Co.	Fort Worth, Tex.	W
109	500	884	2200	60	9″ Rougher Mill	Geared	1925	Crucible Steel Co.	Atha Works	W
110	500	888–540	6600	60 cy.	11″ Finishing Stand. Mil	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
111	500–250	890–513 440–256	2200	60 cy.	10″ Merchant Mill	Geared	1919	Hunter Crucible Steel Co.	Cleveland, Ohio	W
112	500	900	440	60	10″ Merchant Mill	Geared	1925	Latrobe Elec. Steel Co.	Latrobe, Pa.	GE
113	525	125	2200	25 cy.	Merchant Mill	Rope	1910	American Sheet & Tin Plate Co.	Gary, Ind.	GE
114	550	120–300	250	d.c.	11″ Merchant Mill	Direct	1923	Firth Sterling Steel Co.	McKeesport, Pa.	W
115	550	336–588	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
116	550	420–714	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
117	550	420–714	600	d.c.	9″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
118	550–360	875–585	2200	60 cy.	12″ Merchant Mill	Geared	1917	Norfolk & Western Railroad Co.	Roanoke, Va.	W
119	550	880	2200	60 cy.	16″ Merchant Mill	Geared	1919	Danville Structural Tube Co.	Danville, Pa.	W
120	550	880	2200	60 cy.	Merchant Mill	Geared	1921	Danville Structural Tube Co.	Danville, Pa.	W
121	575	300–214	6600	25 cy.	10″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
122	575–575	375–250	6600	25 cy.	8″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
123	600	200–300	230	d.c.	9″ Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
124	600	200–300	230	d.c.	9″ Merchant Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
125	600–600	214– 93	6600	25 cy.	12″ Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
126	600–525	250–125	2200	25 cy.	16″ & 14″ Merchant Mill	Direct & Rope	1913	Bethlehem Steel Co.	Steelton, Pa.	GE
127	600–400–200	421–214–107	440	25 cy.	9″ Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
128	600	365	6600	25 cy.	10″ Merchant Mill	Direct	1913	Minnesota Steel Co.	Duluth, Minn.	W
129	600–400	375–210	2200	25 cy.	9″ Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
130	600	390	440	60 cy.	20″ Merchant Mill	Geared	1916	Stanley Works	New Haven, Conn.	W
131	600	400–800	250	d.c.	18″ Merchant Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
132	600–600–600	469–375–281	2200	25 cy.	8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
133	600	485	2200	25 cy.	10″ Merchant (Fin.) Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
134	600	485	440	25 cy.	20″ Merchant Mill	Geared	1915	Hess Steel Corporation	Baltimore, Md.	W
135	600	500	2200	60 cy.	20″ Merchant Mill	Geared	1916	Carpenter Steel Co.	Reading, Pa.	W
136	600	500	2200	60 cy.	16″ Merchant Mill	Geared	1917	Central Steel Co.	Massillon, Ohio	W
137	600	500	440	25 cy.	16″ Merchant Mill	Geared	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
138	600–440	514–300	4150	60	10″ Merchant Mill	Rope	1912	W. Ames & Co.	Jersey City, N. J.	GE
139	600	585–325	550	40 cy.	16″ Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
140	600–500–400	500–500–400	2200	25 cy.	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
141	600	705	2200	60	Merchant Mill	Geared	1927	Pollak Steel Co.	Cincinnati, O.	W
142	600	900	2300	60	10″ Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	GE
143	650	160	440	60 cy.	14″ Guide Mill	Coupled		Withrow Steel Co.	Neville Island, Pa.	AC
144	650	184	6600	25 cy.	18″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
145	650	184	6600	25 cy.	14″ Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
146	650	200	440	60 cy.	14″ Guide Mill	Coupled		Withrow Steel Co.	Neville Island, Pa.	AC
147	650	210	6600	25 cy.	12″ Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
148	650	293	2200	60 cy.	9″ Merchant Mill	Rope	1919	Harrisburg Pipe & Pipe Bending Co.	Harrisburg, Pa.	W
149	650	500	6600	25 cy.	10″ Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
150	650	500	6600	25 cy.	10″ Merchant Mill	Direct	1916	Illinois Steel Co.	Gary, Ind.	GE
151	700	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
152	700	130–310	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
153	700	187	2200	25 cy.	14″ Merchant Mill	Direct	1920	Donner Steel Co.	Buffalo, NY.	GE
154	700	210–660	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
155	700	210–660	600	d.c.	10″ Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
156	700	240–450	250	d.c.	9″ Merchant Mill	Direct	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
157	700	364	2200	25 cy.	8″ Merchant Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
158	700–600–400	400–300–200	2200	25 cy.	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
159	700–600–400	400–300–200	2200	25 cy.	Merchant Mill, No. 10	Belt	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
160	700	440	2200	60	16″ Mill	Geared	1926	Connors Steel Co.	Birmingham, Ala.	AC
161	700	480–290	2200	25 cy.	12″ Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
162	700	730–490	4000	25 cy.	14″ Merchant Mill	Geared	1916	Atlas Steel Corporation	Dunkirk, N. Y.	W
163	700	735	4000	25 cy.	14″ Merchant Mill	Geared	1920	Atlas Steel Corporation	Dunkirk, N. Y.	W
164	700	880–530	2200	60 cy.	10″ Finishing Mill	Geared	1923	Crucible Steel Co. of America, Park Works	Pittsburgh, Pa.	W
165										
166	750	150–250	600	d.c.	14″ Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
167	750	277	2200	60 cy.	18″ Merchant Mill	Geared	1915	Pacific Coast Steel Co.	San Francisco, Cal.	GE
168	750	514	2200	60	Merchant Mill	Geared	1920	W. M. Lewis	Indianapolis, Ind.	AC
169	800	163	2200	25 cy.	22″ Merchant Mill	Rope	1905	Ontario Iron & Steel Co.	Welland, Ont.	W
170	800	189	2200	60	Merchant Mill	Direct	1925	Pacific Coast Steel Co.	San Francisco, Cal.	CW
171	800	200–400	250	d.c.	9″ 7 Stand Merchant Mill	Coupled	1926	Crucible Steel Co. of America	Harrison, N. J.	AC
172	800	200–415	600	d.c.	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
173	800	200–415	600	d.c.	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
174	800	200–415	600	d.c.	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
175	800	200–600	500	d.c.	10″ Merchant Rod & Strip Mill	Geared	1927	Ford Motor Co.	Detroit, Mich.	W

MERCHANT MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
176	800-800	214-167	6600	25 cy.	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
177	800	240-480	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
178	800	257	2200	60 cy.	18" Merchant Mill	Geared	1919	Columbia Steel Co.	Pittsburgh, Cal.	GE
179	800	268	2200	60 cy.	14" & 10" Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
180	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
181	800	275-550	700	d.c.	12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
182	800	275-550	700	d.c.	9" Merchant Mill	Direct	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
183	800	320	440	60 cy.	9" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mill	Pittsburgh, Pa.	W
184	800	320	440	60 cy.	10" Merchant Mill	Belted	1914	Carnegie Steel Co. Painter Mill	Pittsburgh, Pa.	W
185	800	350-700	600	d.c.	20" Merchant (Breakd'n)	Geared	1921	Driver Harris Co.	Harrison, N. J.	W
186	800	350-750	600	d.c.	8" Merchant Mill Cont.	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
187	800	353	2200	60 cy.	12"-5 Stand. Merch. Mill	Belt	1924	United Steel Co.	Everett, Wash.	W
188	800	367	2200	25 cy.	8" Merchant Mill	Direct	1917	Donner Steel Co.	BuZalo, N. Y.	W
189	800	375	2200	25 cy.	Merchant Mill	Geared	1920	Bethlehem Steel Co.	Johnstown, Pa.	GE
190	800	400-600	600	d.c.	16" Merchant Mill	Geared	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
191	800	410-720	230	d.c.	16" Merchant (Rougher)	Geared	1923	Timken Roller Bearing Co.	Canton, Ohio	W
192	800	440	2200	60 cy.	18" Merchant (Fin.) Mill	Geared	1918	Canton Sheet Steel Co.	Canton, Ohio	W
193	800	705	2200	60 cy.	12" Merchant Mill	Geared	1919	McConway Torley Co.	Pittsburgh, Pa.	W
194	800	730-365	2200	50 cy.	12" Merchant Mill	Geared	1917	Columbia Steel Co.	Los Angeles, Cal.	W
195	800	730-365	2200	50 cy.	22" Merchant Mill	Geared	1917	Columbia Steel Co.	Los Angeles, Cal.	W
196	800	730-485	2200	50 cy.	12" Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
197	800	875-700	2200	60 cy.	16" Merchant Mill	Geared	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
198	800	892-623	2200	60 cy.	20" Merchant (Fin.) Mill	Geared	1918	Hoosier Rolling Mill	Terre Haute Ind.	W
199	800-800	900-720	2200	60 cy.	9" Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
200	800-800	900-720	2200	60 cy.	9" Merchant Mill	Geared	1923	Knoxville Iron Co.	Knoxville, Tenn.	GE
201	840-700-560	360-300-240	6600	25	9" Merchant Mill	Direct	1925	Bethlehem Steel Co.	Bethlehem, Pa.	GE
202	850-570	214-143	6600	25 cy.	Merchant Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
203	850-850	214-187	6600	25 cy.	10" Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
204	850-850	214-187	6600	26 cy.	10" Merchant Mill	Rope	1916	Illinois Steel Co.	Gary, Ind.	GE
205	800	94	2200	25 cy.	18" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
206	800	100	6600	25 cy.	16" Merchant Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
207	850	514	2200	60	14" Merchant Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	W
208	900-900	214-150	2200	25 cy.	12" Merchant Mill	Direct	1910	Algoma Steel Co.	Sault St. Marie, Can.	GE
209	1000	184	2200	25 cy.	16" Merchant Mill	Lirect	1908	Bethlehem Steel Co.	Johnstown, Pa.	W
210	1000	200-600	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
211	1000	250	2200	60 cy.	18" Merchant Mill	Geared	1918	Canton Sheet & Steel Co.	Canton, Ohio	W
212	1000	290-500	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Indiana	GE
213	1000	295	2200	60 cy.	12" Cont. and 10" Merchant Mill	Rope & Direct	1920	Kansas City Bolt & Nut Co.	Kansas City, Mo.	W
214	1000	300	2200	25 cy.	10" Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	GE
215	1000	350-150	2200	60 cy.	12" Merchant Mill	Direct	1918	Central Steel Co.	Massillon, Ohio	W
216	1000	365	2200	50 cy.	Merchant Mill	Geared	1923	Columbia Steel Co.	Torrance, Cal.	W
217	1000	375	4400	25 cy.	Merchant Mill	Geared	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
218	1000	518-800	250	d.c.	20" Merchant Mill	Geared	1919	National Farming Machinery, Ltd.	Montmagny, P. Q.	W
219	1000	590-450	4000	60 cy.	14" Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
220	1000	590-450	4000	60 cy.	14" Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
221	1000	725	2200	25 cy.	12" Merchant Mill	Geared	1922	Burlington Steel Co., Ltd.	Hamilton, Ont.	W
222	1100	294-205	2200	60 cy.	20" Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
223	1190-875-525	350-250-150	2200	25	Merchant Mill	Direct-Rope	1925	Bethlehem Steel Co.	Lebanon, Pa.	GE
224	1200-1200	150-250	230	d.c.	12" Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
225	1200	292	2200	25 cy.	12" Cont. and 10"	Direct				
226	1200	160-320	250	d.c.	12" Merchant Mill	Direct & Rope	1926 1912	Pittsburgh Crucible Steel Co. Laclede Steel Co.	Midland, Pa. Alton, Ill.	GE W
227	1200-1150-800	300-214-150	2200	25 cy.	Merchant Mill, No. 10	Geared	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
228	1200-1000-800	300-250-200	4400	25 cy.	14" Merchant Mill	Direct	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
229	1200	300-500	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
230	1200-1200-865	340-277-200	2200	60	11" Merchant Mill	Geared	1927	Bourne Fuller Co.	Cleveland, Ohio	GE
231	1200	368	2200	50 cy.	20" Merchant Mill	Geared	1919	Southern California Iron & Steel Co.	Los Angeles, Cal.	W
232	1200	485	6400	25 cy.	12" Merchant Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
233	1200	590-407	2200	60 cy.	20" Mer. (Rough.) Mill	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
234	1250	300-550	500	d.c.	10" Merchant Mill	Direct	1927	Ford Motor Co.	Detroit, Mich.	W
235	1250	375	2200	25 cy.	Merchants Bar Mill	Geared	1919	Valley Steel Co.	Milwaukee, Wis.	AC
236	1250	712-430	6600	60 cy.	3 Stand 12" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
237	1300- 900	214-140	2200	25 cy.	12" Merchant Mill	Direct	1912	Gulf States Steel Co.	Birmingham, Ala.	GE
238	1300-1300	214-187	6600	25 cy.	10" Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	GE
239	1400- 945	600-405	2200	60 cy.	21" Merchant Mill	Geared	1915	Union Rolling Mills Co.	Cleveland, Ohio	GE
240	1500	50-80	600	d.c.	8" Merchant Cont. Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
241	1500	80	2200	60 cy.	Morgan Cont. Mill	Coupled	1920	Interstate Iron & Steel Co.	Chicago, Ill.	AC
242	1500	94	2200	25 cy.	18" Merchant Mill	Direct	1910	Algoma Steel Co.	S'lt. St. Marie, Can.	GE
243	1500	100-150	600	d.c.	14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
244	1500	200-300	600	d.c.	10" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
245	1500	218-145	6600	25 cy.	18" Merchant Mill	Geared	1916	Carnegie Steel Co.	Duquesne, Pa.	W
246	1500-1250-875	300-250-175	2200	50	Merchant Mill	Direct	1925	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	GE
247	1500-1200-900	320-275-200	2200	50	10" Merchant Mill	Geared	1925	Pacific Coast Steel Co.	San Francisco, Cal.	GE
248	1500	360-240	6600	25 cy.	12" Merchant Mill	Rope	1916	Carnegie Steel Co.	Duquesne, Pa.	W
249	1500-1125	375-281	2200	25 cy.	10" Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
250	1500	593	6600	60 cy.	6 Stand 11" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
251	1500	890-540	6600	60 cy.	4 Stand 12" Mill	Coupled	1921	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
252	1750-1750-1140	485-360-235	2200	60	16"-14" Merchant Mill	Geared	1927	Bourne Fuller Co.	Cleveland, Ohio	GE
253	1800	200-400	600	d.c.	8" Merchant Cont. Mill	Geared	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
254	1800-1800	250-125	6600	25 cy.	22" Merchant Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
255	1800	350-640	500	d.c.	18" Rougher Merch. Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
256	1800	550-650	250	d.c.	22" Merchant Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
257	2000	94	2200	25 cy.	18" Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
258	2000	113	6600	25 cy.	12" Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
259	2000	134-275	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
260	2000	137½-275	500	d.c.	10" Merchant-Rod & Strip Mill	Direct	1927	Ford Motor Co.	Detroit, Mich.	W
261	2000	163-113	6600	25 cy.	10" Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
262	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
263	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
264	2000	230-460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
265	2000	250-150	2200	60 cy.	Morgan Cont. Mill	Coupled	1919	Interstate Iron & Steel Co.	Chicago, Ill.	AC
266	2000	315-500	600	d.c.	10" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary Ind.	GE
267	2000	500-300	2200	50	22" Merchant Mill	Geared	1927	Columbia Steel Corp.	Torrance, Calif.	GE
268	2500	113-91	6600	25 cy.	12" Merchant Mill	Direct	1909	Indiana Steel Co.	Gary, Ind.	W
269	3000	209	6600	25 cy.	12" and 16" Merchant Mill	Rope & Geared	1913	Minnesota Steel Co.	Duluth, Minn.	W
270	3000	375	2200	25 cy.	14" Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
271	3000	505-300	2200	60 cy.	12" Merchant Mill	Geared	1920	United Alloy Steel Corporation	Canton, Ohio	W
272	3200	91	6600	25 cy.	18" Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
273	3200	91	6600	25 cy.	14" Merchant Mill	Geared	1909	Indiana Steel Co.	Gary, Ind.	W
274	4000	147	6600	25 cy.	20" Merchant Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	W
275	4500-4500	67.5-110	500	d.c.	14" Merchant Mill	Geared	1923	Ford Motor Co.	Detroit, Mich.	GE
276	4500-4500	500-300	2200	25 cy.	14" Merchant Mill	Geared	1923	Inland Steel Co.	Indiana Harbor, Ind.	GE
277	5610-4500-3370	156-125-93.6	6600	25	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, O.	GE

WIRE MILLS

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
2	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
3	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
4	300	375	2200	25 cy.	Wire Mill	Geared	1910	Bethlehem Steel Co.	Johnstown, Pa.	GE
5	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
6	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
7	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
8	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
9	300	375	2200	25 cy.	Wire Mill	Belt	1915	American Steel & Wire Co.	Cleveland, Ohio	GE
10	300	450	440	60 cy.	Wire Mill		1914	American Steel & Wire Co.	Joliet, Ill.	AC
11	300	450	440	60 cy.	Wire Mill	Geared	1914	American Steel & Wire Co.	Joliet, Ill.	AC
12	300	600	2300	60 cy.	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
13	325	600	2300	60 cy.	Wire Mill	Geared	1917	American Steel & Wire Co.	Waukegan, Ill.	GE
14	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
15	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
16	350	300	230	d.c.	Wire Draw Bench	Coupled	1908	Pittsburgh Steel Co.	Monessen, Pa.	CW
17	350	300	230	d.c.	Wire Draw Bench	Coupled	1911	Pittsburgh Steel Co.	Monessen, Pa.	CW
18	400	600	2200	60 cy.	Wire Rod Mill	Geared	1917	Rome Wire Co.	Rome, N. Y.	AC
19	400	600	440	60 cy.	Wire Rod Mill	Coupled	1917	Rome Wire Co.	Rome, N. Y.	AC
20	500	450	440	60 cy.	Wire Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
21	750	514	2200	60 cy.	Wire Rod Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
22	800	450	2200	60	Wire Rod Mill	Coupled	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
23	900	163	2200	60 cy.	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
24	900	163	2200	60	Wire Rod Mill	Rope	1919	Black Steel & Wire Co.	Kansas City, Mo.	AC
25	1200	514	2200	60 cy.	Wire Rod Mill	Geared	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
26	1300	360	2200	60 cy.	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC
27	1500	514	2200	60 cy.	Wire Rod Mill	Coupled	1917	Kokomo Steel & Wire Co.	Kokomo, Ind.	AC

WHEEL MILLS

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	450–750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
2	300	450–750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
3	500	155–500	250	d.c.	Tyre Mill	Direct	1923	McConway Torley Co.	Pittsburgh, Pa.	W
4	500	214	6600	25 cy.	Axle Mill	Geared	1909	Illinois Steel Co.	Gary, Ind.	GE
5	500	375	2200	25 cy.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
6	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
7	700	200	240	d.c.	Pontoon Mill	Direct	1926	M. W. Kellogg	Newark, N. J.	CW
8	750	130	550	d.c.	Wheel Mill	Direct	1915	Carnegie Steel Co.	McKees Rocks, Pa.	GE
9	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
10	750	160	550	d.c.	Wheel Mill	Direct	1916	Edgewater Steel Co.	Oakmont, Pa.	GE
11	750	160	550	d.c.	Wheel Mill	Direct	1919	Edgewater Steel Co.	Oakmont, Pa.	GE
12	750	190–375	245	d.c.	Pontoon Mill	Coupled	1927	M. W. Kellogg Co.	Jersey City, N. J.	CW
13	750	190–375	245	d.c.	Pontoon Mill	Coupled	1927	M. W. Kellogg Co.	Jersey City, N. J.	CW
14	900–720	200–160	220	d.c.	Wheel Mill	Geared	1906	Bethlehem Steel Co.	Johnstown, Pa.	GE
15	1000	137	6600	25 cy.	Wheel Mill	Geared	1916	Illinois Steel Co.	Gary, Ind.	AC
16	1000	375	2200	25 cy.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
17	2000	375	2200	25 cy.	Wheel Mill	Geared	1916	Bethlehem Steel Co.	Johnstown, Pa.	AC

ALUMINUM, BRASS, COPPER AND NON-FERROUS MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
2	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
3	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
4	300	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
5	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
6	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
7	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Farimont, W. Va.	W
8	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
9	300	300	2200	60 cy.	26″ Cold Mill	Coupled	1921	International Nickel Co.	Huntington, W. Va.	AC
10	300–400	400–800	230	d.c.	14″-4-High Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
11	300	435	2200	60 cy.	24″ x 48″ Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
12	300	435	2200	60 cy.	18″ Copper Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
13	300	500		60	Brass Mill	Coupled	1917	British American Metals Co.	Plainfield, N. J.	CW
14	300	514	440	60 cy.	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
15	300	514	550	60 cy.	Brass Sheet Mill	Geared	1919	American Brass Company	Hastings, N. Y.	GE
16	300	585	440	60 cy.	18″ Copper (Rough.) Mill	Chain	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
17	300	600	2200	60 cy.	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
18	300	600	440	60 cy.	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
19	300	600	440	60 cy.	Brass Mill		1920	Detroit Copper & Brass Co.	Detroit, Mich.	AC
20	300	600	440	60	Copper Strip Mill	Geared	1925	Detroit Copper & Brass Co.	Detroit, Mich.	CW
21	350	250	440	25 cy.	Brass Mill	Geared	1921	Harrison Radiator Corp.	Lockport, N. Y.	GE
22	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
23	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	GE
24	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Co.	Kenosha, Wis.	GE
25	350–350	275–470	375	d.c.	Reversing Copper Mill	Geared	1922	Taunton-New Bedf'd Copper Co.	Taunton, Mass.	GE
26	350	400	2200	60 cy.	Wire Rod Mill	Geared	1918	Taunton New Bedf'd Copper Co.	New Bedford, Mass.	AC
27	350	400	2200	60 cy.	Wire Rod Mill	Coupled	1918	Taunton New Bedf'd Copper Co.	New Bedford, Mass.	AC
28	350	400	2200	60 cy.	Wire Rod Mill	Coupled	1918	Taunton New Bedf'd Copper Co.	New Bedford, Mass.	AC
29	350	490	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
30	350	490	2200	25 cy.	Brass Mill	Geared	1920	American Brass Co.	Buffalo, N. Y.	W
31	400	277	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC
32	400	350	440	60 cy.	9″ Copper (Fin.) Mill	Direct	1916	Standard Underground Cable Co.	Perth Amboy, N. J.	W
33	400	352	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
34	400	360	2200	60 cy.	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
35	400	360	2200	60 cy.	Brass Mill	Geared	1917	American Brass Co.	Waterbury, Conn.	GE
36	400	360	2200	60 cy.	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
37	400	360	2200	60 cy.	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
38	400	400	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC

ALUMINUM, BRASS, COPPER AND NON-FERROUS MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
39	400	435	2200	60 cy.	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa.	W
40	400	435	2200	60 cy.	Aluminum Mill	Geared	1918	U. S. Aluminum Co.	New Kensington, Pa.	W
41	400	435	2200	60 cy.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Edgewater, N. J.	W
42	400	440	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
43	400	450	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
44	400	450	440	60 cy.	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
45	400	450	440	60 cy.	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
46	400	450	440	60 cy.	Sheet Mill	Geared	1924	New Jersey Zinc Co.	Palmerton, Pa.	GE
47	400	514	2200	60 cy.	Brass Tubes	Geared	1915	American Brass Co.	Waterbury, Conn.	GE
48	400	514	2200	60 cy.	Brass Tubes	Geared	1915	American Brass Co.	Waterbury, Conn.	GE
49	400	514	440	60 cy.	16″ Copper Bar Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
50	400	514	2200	60 cy.	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
51	400	514	2200	60 cy.	20″ Flat Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
52	400	514	2200	60 cy.	24″ Roughing Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
53	400	514	2200	60 cy.	18″ Bar Mill	Geared	1915	American Brass Company	Kenosha, Wis.	AC
54	400	575	440	60 cy.	Sheet Copper Rolling Mill	Geared	1923	American Metal Products Co.	Milwaukee, Wis.	W
55	400	600	440	60 cy.	Brass Mill	Geared	1917	Rome Brass & Copper Co.	Rome, N. Y.	GE
56	400	600	2200	60 cy.	Brass Mill	Geared	1921	American Brass Co.	Torrington, Conn.	GE
57	400	600	2200	60 cy.	Zinc Mill	Geared	1922	Ball Bros. Glass Co.	Muncie, Ind.	GE
58	400	600	2200	60	Brass Rolling Mill	Geared	1925	American Brass Co.	Torrington, Conn.	GE
59	400	720	2200	60 cy.	Copper Mill	Geared	1920	Rome Wire Co.	Rome, N. Y.	GE
60	400	720	550	60 cy.	Copper Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
61	400	720	4600	60	Copper Mills	Geared	1927	Higgins Brass & Mfg. Co.	Detroit, Mich.	GE
62	400	720	4600	60	Copper Mills	Geared	1927	Higgins Brass & Mfg. Co.	Detroit, Mich.	GE
63	400–200	800–400	230	d.c.	Copper Sheet Mill	Geared	1925	Rome Brass & Copper Co.	Rome, N. Y.	GE
64	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
65	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
66	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
67	400	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
68	400	900	550	60 cy.	Brass Mill	Geared	1921	American Brass Company	Ansonia, Conn.	GE
69	450	200–400	230	d.c.	Zinc Sheet Mill 26″ x 72″	Geared	1924	Illinois Zinc Co.	Peru, Illinois	W
70	450	500	440	60 cy.	Brass Mill	Geared	1918	Michigan Copper & Brass Co.	Detroit, Mich.	W
71	450	550–750	230	d.c.	Zinc Rolls	Coupled	1924	Mattheisen Hegeler Zinc Co.	LaSalle, Ill.	CW
72	450	550–750	230	d.c.	Zinc Strip Mills	Geared	1925	Mattheisen & Hegeler Zinc Co.	LaSalle, Ill.	CW
73	450	600	550	60 cy.	Copper Rod Mill	Geared	1920	Phillips Wire Co.	Pawtucket, R. I.	GE
74	450	870	440	60 cy.	Copper Clad Mill	Geared	1915	Duplex Metal Co.	Philadelphia, Pa.	W
75	500	120	2200	60	Copper Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	AC
76	500	0–200	500	d.c.	78″ Rev. Brass Plate Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
77	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
78	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
79	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
80	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
81	500	220–400	500	d.c.	Brass Mill	Geared	1913	Scoville Manufacturing Co.	Waterbury, Conn.	W
82	500	290	2200	25 cy.	Brass Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	W
83	500	360	2200	60 cy.	Tube Mill	Geared	1915	American Brass Company	Waterbury, Conn.	GE
84	500	360	2200	60 cy.	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
85	500	360	440	60 cy.	Brass Mill	Direct	1923	Rome Brass & Copper Co.	Rome, N. Y.	GE
86	500	360	440	60 cy.	Brass Mill	Direct	1923	Rome Brass & Copper Co.	Rome, N. Y.	GE
87	500	360–612	600	d.c.	Reversing Hot Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	GE
88	500	365	440	25 cy.	Copper Rolling Mill	Rope	1922	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
89	500	368	2200	25 cy.	Brass Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	W
90	500	375	2300	25		Geared	1925	Buffalo Copper & Brass Co.	Buffalo, N. Y.	AC
91	500	375	2200	25	10″ Aluminum Rod Mill	Geared	1926	U. S. Aluminum Co.	Massena, N. Y.	GE
92	500	400–800	230	d.c.	14″ Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
93	500	400–800	230	d.c.	14″ Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
94	500	440	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
95	500	450	2200	60 cy.	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
96	500	450	2200	60 cy.	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
97	500	450	2200	60 cy.	Brass Mill	Geared	1915	Scoville Manufacturing Co.	Waterbury, Conn.	GE
98	500	450	2200	60 cy.	Brass Mill	Geared	1915	Chase Metal Works	Waterbury, Conn.	GE
99	500	450	440	60 cy.	20″ Copper Mill	Geared	1916	Waclark Wire Co.	Elizabeth, N. J.	GE
100	500	450	2200	60 cy.	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
101	500	450	2200	60 cy.	Copper Mill	Geared	1917	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
102	500	450	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
103	500	450	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
104	500	450	440	60 cy.	Brass Sheet Mill	Geared	1920	Detroit Copper & Brass Co.	Detroit, Mich.	GE
105	500	450	2200	60 cy.	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
106	500	450	2200	60 cy.	Brass Mill	Geared	1921	American Brass Company	Torrington, Conn.	GE
107	500	450	2200	60 cy.	14″ Roughing Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
108	500	450	2200	60 cy.	9″ Finishing Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
109	500	450	440	60	20″ Copper Mill	Coupled	1918	Waclark Wire Company	Bayway, N. J.	CW
110	500	450	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Black Eagle, Mont.	GE
111	500	500	2200	25	Experimental Alum.	Geared	1925	U. S. Aluminum Co.	Massena, N. Y.	GE
112	500	514	550	60 cy.	18″ Copper Mill	Geared	1919	American Brass Co.	Hastings, N. Y.	GE
113	500	514	2200	60 cy.	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
114	500	575	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
115	500	600	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
116	500	600	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Waterbury, Conn.	GE
117	500	600	2200	60 cy.	Brass Mill	Geared	1917	American Brass Company	Torrington, Conn.	GE
118	500	600	2200	60 cy.	Copper Rod Mill	Geared	1922	E. F. Phillips Electrical Works, Ltd.	Montreal, Que.	W
119	500	600	2200	60 cy.	Copper Rolling Mill	Geared	1923	American Brass Company	Torrington, Conn.	GE
120	500	600	440	60	Aluminum Mill	Geared	1922	Aluminum Goods Mfg. Co.	Manitowoc, Wis.	GE
121	600	300	440	25 cy.	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
122	600	300	440	25 cy.	Tandem Plate Mill	Rope	1920	Baltimore Copper S. & R. Co.	Baltimore, Md.	AC
123	600	300	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
124	600	360–400	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
125	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
126	600	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
127	600	360	440	60 cy.	Copper Mills	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
128	600	360	550	60	Copper Rod Mill	Direct	1926	American Brass Co.	Ansonia, Conn.	GE
129	600	450	2200	60 cy.	Aluminum Strip Mill	Geared	1914	Cleveland Metal Products Co.	Cleveland, Ohio	GE
130	600	500	575	25 cy.	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
131	600	500	575	25 cy.	Brass Sheet Mill	Geared	1920	Baltimore Tube Co.	Baltimore, Md.	GE
132	600	514	2200	60 cy.	Brass Mill	Geared	1922	Western Cartridge Co.	East Alton, Ill.	GE
133	600	514	440	60	Aluminum Mill	Geared	1922	Aluminum Goods Mfg. Co.	Manitowoc, Wis.	GE
134	600	600	4000	60 cy.	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
135	600	600	2200	60 cy.	Copper Mill	Geared	1920	American Brass Co.	Waterbury, Conn.	GE
136	600	600	2200	60 cy.	Brass Mill	Geared	1921	American Brass Company	Waterbury, Conn.	GE
137	600	600	550	60	Copper Rod Mill	Geared	1925	Phillips Wire Co.	Pawtucket, R. I.	GE
138	600	900	440	60 cy.	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
139	600	900	550	60 cy.	Brass Mill	Geared	1920	American Brass Company	Ansonia, Conn.	GE
140	600	900	440	60 cy.	Copper Mill	Geared	1923	Am. Insulated Wire & Cable Co.	Chicago, Ill.	GE
141	700	360	440	60 cy.	Brass Mill	Chain		Detroit Copper & Brass Co.	Detroit, Mich.	AC
142	700	585	2200	60 cy.	Copper Rod Mill	Geared	1923	Eugene F. Phillips Elec. Works, Ltd.	Montreal, Que.	W
143	700	735	440	25 cy.	Copper Rolling Mill	Geared	1924	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
144	700	735	440	25 cy.	Copper Rolling Mill	Geared	1924	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
145	700	735	440	25 cy.	Copper Rolling Mill	Geared	1924	Baltimore Cop. Smelt. & Roll. Co.	Baltimore, Md.	W
146	750	353	4600	60 cy.	Brass Mill	Geared	1924	Scoville Manufacturing Co.	Waterbury, Conn.	W
147	750	375	2200	25	10″ Aluminum Rod Mill	Geared	1926	U. S. Aluminum Co.	Massena, N. Y.	GE

ALUMINUM, BRASS, COPPER AND NON-FERROUS MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
148	750	514	550	60 cy.	10″ and 9″ Copper Mills	Geared	1919	American Brass Company	Hastings, N. Y.	GE
149	750	514	550	60 cy.	10″ and 9″ Copper Mills	Geared	1919	American Brass Company	Hastings, N. Y.	GE
150	750	600	4000	60 cy.	Brass Mill	Geared	1919	Bristol Brass Co.	Bristol, Conn.	GE
151	750	720	2200	60 cy.	Zinc Rolling Mill	Geared	1923	American Zinc Products Co.	Greencastle, Ind.	GE
152	750	720	550	50	Brass Rolling Mill	Geared	1925	American Brass Co.	Ansonia, Conn.	GE
153	800	350	2200	60 cy.	Aluminum Mill	Geared	1915	U. S. Aluminum Co.	Edgewater, N. J.	W
154	800	353	440	50 cy.	8″ Copper Rod Mill	Direct	1923	Standard Underground Cable Co.	St. Louis, Mo.	W
155	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
156	800	360–440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
157	800	370	650	d.c.	Aluminum Mill	Direct	1917	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
158	800	370–400	650	d.c.	Aluminum Mill	Direct	1919	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
159	800	443	2200	60 cy.	Roughing Mill	Coupled	1920	International Nickel Co.	Huntington, W. Va.	AC
160	800	450	2200	60 cy.	14″ Merchant Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
161	800–400	450–225	2200	60	Copper Mill	Direct	1925	Anaconda Copper Mining Co.	Mont.	GE
162	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
163	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
164	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
165	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
166	800	720	4600	60	Rolling Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	AC
167	800	870	2200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
168	800	870	3200	60 cy.	Copper Rod Mill	Geared	1923	American Brass Company	Kenosha, Wis.	W
169	800	900	440	60 cy.	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
170	900	900	440	60 cy.	Copper Rod Mill	Geared	1920	Western Electric Co.	Hawthorne, Ill.	GE
171	1000	40–60	270	d.c.	28″ Rev. Copper Mill	Direct	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
172	1000	300	2200	25 cy.	Aluminum Rod Mill	Geared	1922	U. S. Aluminum Co.	Massena, N. Y.	GE
173	1000	450	2200	60 cy.	20″ Merchant Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
174	1000	600	2300	60	Copper Mill	Geared	1925	American Copper Products Co.	Elizabeth, N. J.	GE
175	1200	360	2200	60 cy.	24″ Bar Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
176	1200	360	2200	60 cy.	30″ Sheet Mill	Geared	1920	International Nickel Co.	Huntington, W. Va.	AC
177	1200	400	650	d.c.	Aluminum Plate Mill	Geared	1915	Aluminum Company of America	Niagara Falls, N. Y.	GE
178	1350	600	2300	60 cy.	Copper Mill	Geared	1918	American Brass Company	Waterbury, Conn.	GE

REVERSING MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	GE
2	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Company	Buffalo, N. Y.	GE
3	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1920	American Brass Company	Kenosha, Wis.	GE
4	350	275–470	375	d.c.	Reversing Copper Mill	Geared	1922	Taunton-New Bedford Copper Co.	Taunton, Mass.	GE
5	500	200	500	d.c.	78″ Rev. Brass Plate Mill	Geared	1920	West Virginia Metal Products Co.	Fairmont, W. Va.	W
6	500	360–612	600	d.c.	Reversing Hot Mill	Geared	1925	Michigan Copper & Brass Co.	Detroit, Mich.	GE
7	700	86	450	d.c.	Shear Intensifier	Direct	1918	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
8	800	20	230	d.c.	32″ x 48″ Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
9	800	20	230	d.c.	32″ x 48″ Plate Mill	Coupled	1910	American Sheet & Tin Plate Co.	Gary, Ind.	CW
10	800	37–70	500	d.c.	Plate Mill	Coupled		Universal Rolling Mill Co.	Bridgeville, Pa.	AC
11	1000	40–60	270	d.c.	28″ Rev. Copper Mill	Direct	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
12	1000	50–100	600	d.c.	24″ Billet (Roughing)	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
13	1000	50–175	600	d.c.	24″ Mill	Direct	1916	Central Steel Co.	Massillon, Ohio	W
14	1200	25–50	330	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
15	1500	65–225	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
16	1500	65–225	750	d.c.	48″ Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
17	1750	70–120	600	d.c.	20″ Billet Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
18	1800	40	600	d.c.	84″ Rev. Shrd. Plate Mill	Direct	1919	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
19	2000	50–100	600	d.c.	30″ Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, O.	W
20	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
21	2000	0–57–163	700	d.c.	52″ Struct. Edging Mill	Direct	1926	Carnegie Steel Co.	Homestead, Pa.	W
22	2100	50–125	700	d.c.	42″ Universal Plate Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
23	2100	47–120	700	d.c.	34″ Blooming Mill	Direct	1916	Penn Seaboard Steel Corporation	New Castle, Del.	W
24	2150	50–100	535	d.c.	Reversing Bar Mill	Direct	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
25	2200	50–120	600	d.c.	40″ Universal Plate Mill	Direct	1919	Dominion Foundrys & Steel Co.	Hamilton, Ont.	W
26	2200	70–150	600	d.c.	28″ Blooming Mill	Direct	1920	Atlantic Steel Co.	Atlanta, Ga.	W
27	2500	53–80	660	d.c.	Reversing Plate Mill	Direct	1926	Lukens Steel Co.	Coatesville, Pa.	GE
28	2900	47–120	700	d.c.	34″ Blooming Mill	Direct	1917	Sharon Steel Hoop Co.	Youngstown, Ohio	W
29	3000	65–130	600	d.c.	30″ Rev. Bar Mill	Direct	1927	National Tube Co.	Lorain, Ohio	W
30	3000	65–130	650	d.c.	30″ Rev. Bar Mill	Direct	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	W
31	3000	70–175	750	d.c.	24″ Bar Mill	Direct	1927	Inland Steel Corp.	Ind. Harbor, Ind.	GE
32	3000	70–150	750		24″ Reversing Bar Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
33	3100	70–150	600	d.c.	Universal Plate Mill	Direct	1925	International Harvester Co	Chicago, Ill.	W
34	3200	50–120	700	d.c.	34″ Struct. (Rough.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
35	3200	50–120	700	d.c.	28″ Struct. (Fin.) Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
36	3250	50–120	500	d.c.	36″ Blooming Mill	Direct	1916	Am. Rolling Mill Co.	Ashland, Ky.	GE
37	3250	50–120	500	d.c.	34″ Blooming Mill	Direct	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
38	3500	70–100	525	d.c.	32″ Blooming Mill	Direct	1913	Steel Company of Canada	Hamilton, Ont.	W
39	3500	50– 75	700	d.c.	34″ Blooming Mill	Direct	1914	Central Steel Co.	Massillon, Ohio	W
40	3500	50–120	700	d.c.	35″ Roughing Struct. Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
41	3500	50–120	700	d.c.	34″ Blooming Mill	Direct	1925	Kokomo Steel & Wire Co.	Kokomo, Ind.	W
42	3500	50–120	700	d.c.	36″ Blooming Mill	Direct	1925	Phoenix Iron Co.	Phoenixville, Pa.	W
43	3600	40– 90	600	d.c.	35″ Blooming Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	W
44	3600	40– 90	600	d.c.	40″ Blooming Mill	Direct	1917	Illinois Steel Co.	Gary, Ind.	W
45	3750	50–130	700	d.c.	Blooming Mill	Direct	1927	Central Alloy Steel Co.	Massillon, Ohio	AC
46	4000	0–150	575	d.c.	36″ Univ. Plate Mill	Direct	1905	Illinois Steel Co.	South Chicago, Ill.	W
47	4000	50–120	700	d.c.	34″ Blooming Mill	Direct	1924	Dorner Steel Co.	Buffalo, N. Y.	GE
48	4000	58–140	750	d.c.	34″ Rev. Blooming Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
49	4000	80–135	650	d.c.	30″ Univ. Skelp Mill	Direct	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
50	4000	0– 80	1200	d.c.	34″ Blooming Mill	Coupled		Algoma Steel Co.	Sault Ste. Marie,Can.	AC
51	5000	40–120	600	d.c.	40″ Blooming Mill	Direct	1916	National Tube Co.	Lorain, Ohio	W
52	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
53	5000	40–120	600	d.c.	35″ Blooming Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
54	5000	50–120	700	d.c.	36″ Rev. Roughing Struct	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
55	5000	50–120	900	d.c.	36″ Roughing Mill	Direct	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
56	5000	70–150	900	d.c.	27″ Rev. Hot Strip Mill	Direct	1926	Columbia Steel Co.	Butler, Pa.	GE
57	5000	75–100	700	d.c.	48″ Universal Plate Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
58	5000	75–150	700	d.c.	28″ Fin. Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	W
59	6000	40–120	600	d.c.	44″ Blooming Mill	Direct	1919	Bethlehem Steel Co.	Steelton, Pa.	W
60	6500	40–120	600	d.c.	40″ Blooming Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
61	6500	50–120	600	d.c.	36″ Blooming Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
62	6500	50–120	600	d.c.	40″ Blooming Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Point, Md.	GE
63	6500	50–120	600	d.c.	40″ Blooming Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
64	6500	60–140	700	d.c.	35″ Rev. Blooming Mill	Direct	1927	Illinois Steel Co.	So. Chicago, Ill.	W

REVERSING MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
65	7000	40-120	700	d.c.	Blooming Mill	Coupled	1925	Illinois Steel Co.	So. Chicago, Ill.	AC
66	7000	50-100	700	d.c.	60" Universal Plate Mill	Direct	1919	Bethlehem Steel Co.	Sparrows Point, Md.	W
67	7000	50-100	650		46" Slabbing Mill	Direct	1925	Bethlehem Steel Co.	Sparrows Point, Md.	GE
68	7000	50-120	700	d.c.	40" Rev. Blooming Mill	Direct	1923	Bethlehem Steel Co.	Lackawanna, N. Y.	W
69	7000	50-120	700	d.c.	44" Blooming Mill	Direct	1924	Carnegie Steel Co.	Homestead, Pa.	W
70	7000	50-120	700	d.c.	40" Blooming Mill	Direct	1924	International Harvester Co. Wisconsin Steel Works	Chicago, Ill.	W
71	7000	50-120	700	d.c.	36" Rev. Rougher Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	W
72	7000	0-50-120	700	d.c.	40" Rev. Blooming Mill	Direct	1926	Forged Steel Wheel Co.	Butler, Pa.	W
73	7000	50-150	700	d.c.	52" Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
74	7000	50-150	700	d.c.	52" Structural Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
75	7000	55-120	900	d.c.	45" Blooming Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
76	7000	40-80	750	d.c.	54" Rev. Blooming Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
77	7000	50-120	750	d.c.	44" Blooming Mill	Direct	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
78	7000	65-100	750	d.c.	48" Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
79	7000	65-100	750	d.c.	48" Rev. Structural Mill	Direct	1926	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
80	8000	40-120	700	d.c.	54" Blooming Mill	Direct	1925	Carnegie Steel Co.	Homestead, Pa.	W
81	8000	150	600	d.c.	28" Rail Mill	Direct	1917	Bethlehem Steel Co.	Lackawanna, N. Y.	GE

A. C. SPEED SETS

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300-300	187.5-112.5	2200	25 cy.	12" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
2	300-300	187.5-112.5	2200	25 cy.	12" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
3	300-300	300-180	2200		10" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
4	300-225-165	335-225-165	6600		12" Hot Strip Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
5	300-300	500-300	2200		9" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
6	300-300	500-300	2200		8" Merchant Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
7	300-150	590-292	2200	60 cy.	9" Merchant Mill	Geared	1920	Cleveland Hardware Co.	Cleveland, Ohio	W
8	350-235	300-200	6600		Merchant Mill	Geared	1920	Illinois Steel Co.	Gary, Ind.	GE
9	350-350	360-240	440	60 cy.	Bar Mill	Coupled		Simmons Mfg. Co.	Kenosha, Wis.	AC
10	400-400	107- 64	2200		16" Bar Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
11	400	720-450	2200	60 cy.	Bar Mill	Geared		Cyclops Steel Co.	Titusville, Pa.	AC
12	450	352-230	2200	60 cy.	8" Merchant Mill	Direct	1919	Bourne-Fuller Co.	Cleveland, Ohio	W
13	450-360	440-350	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
14	450-380	700-595	2200	60 cy.	Cont. Hoop (Fin.) Mill	Direct	1920	Connors Steel Co.	Birmingham, Ala.	W
15	450	730-490	4000	25 cy.	10" Merchant Mill	Geared	1917	Atlas Steel Corporation	Dunkirk, N. Y.	W
16	500-385-250	130-100-65	440		14" Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y.	GE
17	500-500	327-200	440		9" Merchant Mill	Direct	1913	Bourne Fuller Co.	Cleveland, Ohio	GE
18	500-500-500	500-375-265	2200		10" Merchant Mill	Direct & Belt	1916	Donner Steel Co.	Buffalo, N. Y.	GE
19	500	575-865	2200	60 cy.	10" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
20	500	575-865	2200	60 cy.	10" Merchant Mill	Geared	1921	International Nickel Co.	Huntington, W. Va.	W
21	{500 / 250}	{880-514 / 440-256}	2200	60 cy.	10" Merchant Mill	Geared	1919	Hunter Crucible Steel Co.	Cleveland, Ohio	W
22	500	888-540	6600	60 cy.	11" Finishing Stand	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
23	550	320-206	2200	60 cy.	10" Hoop Mill	Direct	1917	Atlantic Steel Co.	Atlanta, Ga.	W
24	600-525	250-125	2200		16" & 15" Merchant Mill	Direct & Rope	1913	Bethlehem Steel Co.	Steelton, Pa.	GE
25	600-600	300-214	2200	25 cy.	Bar Mill	Coupled & Rope		St. Louis Screw Co.	St. Louis, Mo.	W
26	600	300-214	2200	25 cy.	Bar Mill	Chain		St. Louis Screw Co.	St. Louis, Mo.	W
27	600-400-200	321-214-107	440		9" Merchant Mill	Direct	1923	Halcomb Steel Co.	Syracuse, N. Y	GE
28	600-400	375-210	2200		9" Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
29	600-600-600	469-375-281	2200		8" Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
30	600	585-325	500	40 cy.	16" Merchant Mill	Geared	1917	Cohoes Rolling Mill Co.	Cohoes, N. Y.	W
31	600-500-400	600-500-400	2200		Merchant Mill, No. 19	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
32	600-600	720-360	6600	60 cy.	Hot Strip Mill	Geared		Weirton Steel Co.	Weirton, W. Va.	AC
33	700-600-400	400-300-200	2200	25 cy.	Merchant Mill, No. 10	Direct	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
34	700-600-400	400-300-200	2200	25	Merchant Mill, No. 10	Belt	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
35	700	485-290	2200	25 cy.	12" Merchant Mill	Geared	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
36	700	730-490	4000	25 cy.	14" Merchant Mill	Geared	1916	Atlas Steel Corporation	Dunkirk, N. Y.	W
37	700	880-530	2200	60 cy.	10" Finishing Mill	Geared	1923	Crucible Steel Co. of America, Park Works	Pittsburgh, Pa.	W
38	750-750	225-168	440	60 cy.	Bar Mill	Coupled		Simmons Mfg. Co.	Kenosha, Wis.	AC
39	750-625-460	360-300-220	6600		12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
40	750-600-440	473-375-278	6600		12" Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
41	770-700-630	540-490-440	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
42	800	225-150	2200	25 cy.	12" Bar Mill	Direct	1919	Scullin Steel Co.	St. Louis, Mo.	W
43	800	590-292	6600	60 cy.	16" Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
44	800-400	360-180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
45	800-400	360-180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
46	800-800-800	720-600-480	2200		12" Hot Strip	Geared	1920	Canadian Electric Steel Co.	Montreal, Canada	GE
47	800-800-800	720-600-480	2200	60	3-High Blooming Mill	Geared	1927	Copperweld Steel Co.	Glassport, Pa.	GE
48	800	730-365	2200	50 cy.	22" Bar Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
49	800	730-365	2200	50 cy.	12" Merchant Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
50	800	880-490	2200	60 cy.	16" Bar Mill	Geared	1920	Knoxville Iron Co.	Knoxville, Tenn.	W
51	800	880-623	2200	60 cy.	20" Mer. (Roughing) Mill	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
52	840-700-560	360-300-240	6600	40	Merchant Mill	Direct	1925	Bethlehem Steel Co.	Bethlehem, Pa.	GE
53	850-570	214-143	6600		Merchant Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
54	900-710-620	325-257-182	2300		10" Hoop Mill	Geared	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
55	1000	209-150	6400	25 cy.	24" Flat (Fin.) Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	W
56	1000	225-168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
57	1000	225-168	4000	60	Rail Rerolling Mill	Direct	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
58	1000	292-150	2200	60 cy.	12" Merchant Mill	Direct	1918	Central Steel Co.	Massillon, Ohio	W
59	1000	590-450	4000	60 cy.	14" Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
60	1000	590-450	4000	60 cy.	14" Merchant Mill	Geared	1920	Calumet Steel Co.	Chicago, Ill.	W
61	1000	590-495	6600	60 cy.	24" Structural Mill	Geared	1917	Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	W
62	1100	294-295	2200	60 cy.	20" Merchant Mill	Rope	1912	United Alloy Steel Corporation	Canton, Ohio	W
63	1125-900-675	312-250-187	6600	25	12" Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
64	1190-875-525	350-250-150	2200	40	Merchant Mill	Direct-Rope	1925	Bethlehem Steel Co.	Lebanon, Pa.	GE
65	1180-955-705	560-450-336	2200		Rod Mill	Belt	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
66	1200-1150-800	300-214-150	2200	25 cy.	Merchant Mill, No. 10	Geared	1916	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
67	1200-1000-800	300-250-200	4400	25 cy.	14" Merchant Mill	Direct	1919	Buffalo Bolt Co.	N. Tonawanda, N. Y.	GE
68	1200-1000-800	450-375-300	6600	25 cy.	8" Hoop Mill, No. 9	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
69	1200-1000-800	450-375-300	6600	25 cy.	8" Bar Mill, No. 16	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
70	1200-1200-1200	450-360-270	2300		9" Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
71	1200-1200-1200	450-360-270	2300		9" Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
72	1200-1200-1200	450-360-270	2300		9" Hot Strip Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
73	1200-1000-800	450-375-300	6600	25	8" Hoop Mill, No. 8	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE

A. C. SPEED SETS—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
74	1200–1000–800	450–375–300	6600	25	18″ Band Mill, No. 13	Geared	1919	Carnegie Steel Co.	Youngstown, Ohio	GE
75	1200	505–303	6600	60 cy.	16″ Hoop and Band Mill	Geared	1919	Weirton Steel Co.	Weirton, W. Va.	W
76	1200	590–441	2200	50 cy.	16″ Duo & Bull Head Mill	Geared	1916	Central Steel Co.	Massillon, Ohio	W
77	1200	590–407	2200	60 cy.	20″ Merchant (Fin.) Mill	Geared	1918	Hoosier Rolling Mill Co.	Terre Haute, Ind.	W
78	1200–1200–865	340–277–200	*2200	60	11″ Merchant Mill	Geared	1927	Bourne Fuller Co.	Cleveland, Ohio	GE
79	1250–1000–650	650–500–325	2200		Rod Mill	Belt	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
80	1250	712–430	6600	60 cy.	3 Stand 12″ Mill	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
81	1300–900	214–140	2200		12″ Merchant Mill	Direct	1912	Forged Steel Wheel Co.	Butler, Pa.	GE
82	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
83	1350–1000	214–161	4400	25	Rail Rerolling Mill	Direct	1926	Buffalo Steel Co.	Tonawanda, N. Y.	GE
84	1400–1400	600–405	2200		21″ Merchant Mill	Geared	1915	Union Rolling Mills Co.	Cleveland, Ohio	GE
85	1500	133–81.5	6600	25 cy.	18″ Structural Mill	Direct	1915	Bethlehem Steel Co.	Bethlehem, Pa.	W
86	1500	210–140	6600	25 cy.	18″ Bar Mill	Geared	1916	Carnegie Steel Co.	Duquesne, Pa.	W
87	1500–1250–875	300–250–175	2200	50	Merchant Mill	Direct	1925	Southern Calif. Iron & Steel Co.	Los Angeles, Cal.	GE
88	1500–1200–900	320–275–200	2200	60	10″ Merchant Mill	Geared	1925	Pacific Coast Steel Co.	So. San Fran.. Cal.	GE
89	1500	322–193	2200	60	18″ Sheet Bar Mill	Geared	1926	Columbia Steel Co.	Pittsburgh, Calif.	W
90	1500–1250–1000	360–300–240	2200		28″ Rail Mill	Geared	1920	Bethlehem Steel Co.	Steelton, Pa.	GE
91	1500	365–244	6600	25 cy.	12″ Bar Mill	Rope	1916	Carnegie Steel Co.	Du..uesne, Pa.	W
92	1500–1125	375–281	2200		10″ Merchant Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
93	1500–1500	450–360	2300		16″ Hot Strip Mill	Geared	1916	Trumbull Steel Co.	Warren, Ohio	GE
94	1500–1200–900	468–375–281	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
95	1500–1500	514–237	6600	60 cy.	Hot Strip Mill	Geared		Weirton Steel Co.	Weirton, W. Va.	AC
96	1500	514–257	6600	60 cy.		Coupled	1924	Weirton Steel Co.	Weirton, W. Va.	AC
97	1500	890–540	6600	60 cy.	4 Stand 12″ Mill	Coupled		Tennessee Coal, Iron & R. R. Co.	Birmingham, Ala.	AC
98	1600	440–500–540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
99	1600	440–500–540	6600	25	Hoop Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	W
100	1650–1500–1350	413–375–337	6600		10″ Bar Mill, No. 10	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
101	1750–1750–1140	485–360–235	2200	60	16″-14″ Merchant Mill	Geared	1927	Bourne Fuller Co.	Cleveland, Ohio	GE
102	1800–1500–1200	240–200–160	2300		10″ Hoop Mill	Belt	1918	Acme Steel Goods Co.	Riverdale, Ill.	GE
103	1800–1800–1800	370–300–247	6600		Sheet Bar Mill	Geared	1920	American Rolling Mill Co.	Ashland, Ky.	GE
104	1800–1500–1200	450–375–300	6600		10″ Hoop Mill, No. 11	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
105	1850–1450– 925	120– 94– 60	6600		16″ Hand Bar Mill	Direct	1921	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
106	2000–2000–2000	100–83.3–65	6600		12″ Structural Mill	Direct	1916	Bethlehem Steel Co.	Bethlehem, Pa.	GE
107	2000	234–161	2200	60 cy.	10″ Skelp (Fin.) Mill	Belted	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
108	2000–2000	250–161	6600		10″ Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
109	2000	250–150	2200	60 cy.	Morgan Continuous Mill	Coupled		Interstate Iron & Steel Co.	Chicago, Ill.	AC
110	2000	350–234	2200	60 cy.	10″ Skelp (Rough.) Mill	Geared	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
111	2000–2000–1600	450–360–270	2200		16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
112	2000–2000–1600	450–360–270	2200		16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
113	2000–2000–1600	450–360–270	2200		16″ Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
114	2000	500–300	2200	50	22″ Merchant Mill	Geared	1927	Columbia Steel Corp.	Torrance, Calif..	GE
115	2000–1600–1200	625–500–375	6600	25	12″ Strip Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
116	2000–1600–1200	625–500–375	6600	25	14″ Bar Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
117	2070–1650–1205	235-187.5-137	6600		20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
118	2200–2000–1800	275–250–225	6600		10″ Bar Mill, No. 15	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
119	2200–2000–1800	275–250–225	6600	25	18″ Band Mill	Geared	1925	Carnegie Steel Co.	Youngstown, Ohio	GE
120	2200	505–303	2200	60 cy.	18″ Bar Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
121	2300–1300	115.4–65	6600		10″ Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
122	2360–1880–1440	410–327–250	2200		Rod Mill	Geared	1916	Keystone Steel & Wire Co.	Peoria, Ill.	GE
123	2470–1725–1235	430–300–215	2200		Rod Mill	Geared	1916	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
124	2500	354–177	6600	60 cy.	16″ Hoop and Band Mill	Geared	1915	Weirton Steel Co.	Weirton, W. Va.	W
125	2750–2240–1750	262–214–167	6600		12″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
126	2750–2500–2250	275–250–225	6600		14″ Bar Mill, No. 14	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
127	3000–3000–3000	155–144–130	6600		24″ Structural Mill	Direct	1917	Tennessee Coal, Iron & R. R. Co.	Fairfield, Ala.	GE
128	3000–2500–2000	300–250–200	6600		18″ Band Mill, No. 13	Direct	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
129	3000–2500–2000	300–250–200	6600		12″ Hoop Mill, No. 12	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
130	3000	354–212	2200	60 cy.	24″ Skelp Mill	Geared	1920	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
131	3000–2250–1500	500–375–250	2200	25	24″ Sheet Bar Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
132	3000	505–300	2200	60 cy.	12″ Merchant Mill	Geared	1920	United Alloy Steel Corporation	Canton, Ohio	W
133	3600–1940	290–156	2200	60	21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
134	4500–4500	500–300	2200		14″ Merchant Mill	Geared	1923	Inland Steel Co.	Indiana Harbor, Ind.	GE
135	5000–4000–3000	450–360–270	2200	60	16″ Hot Strip Mill	Direct	1925	Trumbull Steel Co.	Warren, Ohio	GE
136	5500–4400–3400	170–136–105	6600		20″ Hot Strip Mill	Direct	1920	Illinois Steel Co.	Gary, Ind.	GE
137	5610–4500–3370	156-125-93.6	6600	25	12″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
138	6700–5000–3320	500–375–250	6600	25	26″ x 21″ Cont. Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
139	7500–4040	250–134	2200	60	21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE

DIRECT CURRENT ADJUSTABLE SPEED DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	200–300	360–920	230		Merchant Mill	Direct	1919	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
2	300	175–225	600	d.c.	10″ Merchant Mill	Direct	1926	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
3	300	175–300	230	d.c.	Tube Mill	Direct	1927	Babcock & Wilcox	Beaver Falls, Pa.	W
4	300	175–300	230	d.c.	Tube Mill	Direct	1927	Babcock & Wilcox	Beaver Falls, Pa.	W
5	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
6	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
7	300	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
8	300	300–400	230	d.c.	Cold Rolling Mill	Geared	1914	Trumbull Steel Co.	Warren, Ohio	W
9	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
10	300	300–600	230	d.c.	20″ x 30″ Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
11	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
12	300	300–600	230	d.c.	22″ x 36″ Brass Mill	Geared	1920	W. Va. Metal Products Co.	Fairmont, W. Va.	W
13	300	300–400	230	d.c.	Cold Rolling	Geared	1920	Alan Wood, Iron & Steel Co.	Conshohocken, Pa	W
14	300	300–650	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
15	300	300–650	250	d.c.	10″ Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
16	300	315–630	230		8″ Merchant Mill	Direct	1919	Donner Steel Co.	Buffalo, N. Y.	GE
17	300	325–650	220	d.c.	Sheet Mill		1919	Aluminum Company of America	New Kensington, Pa.	AC
18	300	345–500	500	d.c.	Tube Rolling Mill	Geared	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
19	300	350–450	230	d.c.	Merchant Bar Mill	Geared	1916	Carbon Steel Co.	Pittsburgh, Pa.	W
20	300	350–450	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
21	300	400–800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
22	300	400–800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
23	300	400–800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
24	300	400–800	230		Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
25	300	400–800	230		20″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
26	300	400–800	230		20″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
27	300	400–800	230		20″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE

DIRECT CURRENT ADJUSTABLE SPEED DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
28	300	400–800	230	d.c.	20" Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
29	300	400–800	230	d.c.	Edging Rolls	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
30	300–400	400–800	230	d.c.	14"-4-High Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
31	300	450–750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
32	300	450–750	230	d.c.	Wheel Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
33	320	400–800	230	d.c.	Cold Strip Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
34	350	200–300	250	d.c.	9" Merchant Mill	Direct	1919	Natl. Farming Machinery, Ltd.	Montmagny, P. Q.	W
35	350	240–360	240	d.c.	10" Merchant Mill	Direct	1911	LaClede Steel Co.	St. Louis, Mo.	GE
36	350	240–480	240	d.c.	10" Merchant Mill	Direct	1923	LaClede Steel Co.	St. Louis, Mo.	GE
37	350	250–325	230	d.c.	9" Merchant Mill	Direct	1921	Wayne Steel Company	Erie, Pa.	W
38	350	300–425	230	d.c.	8" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
39	350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Company	Lorain, Ohio	GE
40	350	360–450	230	d.c.	Welding Rolls	Direct	1920	National Tube Company	Lorain, Ohio	GE
41	350	450–600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
42	350	500	230	d.c.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
43	350	524–850	230	d.c.	18" Blading Mill	Geared	1924	W. E. & M. Co.	South Phila. Works	W
44	360	300–600	230	d.c.	Rod Mill	Direct	1922	United Alloy Steel Corporation	Canton, Ohio	W
45	360	350–500	230	d.c.	7" Rod Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
46	375	430–860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
47	375	430–860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
48	375	430–860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
49	375	430–860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
50	375	430–860	230	d.c.	20" Cold Rolling Mill	Geared	1922	Otis Steel Company	Cleveland, Ohio	W
51	375	430–860	230	d.c.	Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
52	375	430–860	230	d.c.	Cold Roll Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
53	400	200–300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
54	400	240–721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
55	400	240–721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
56	400	240–721	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
57	400	240–721	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
58	400	250–500	230	d.c.	10" Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
59	400	275–500	550	d.c.	12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
60	400	350	230	d.c.	Tube Reeling Drive	Geared	1927	National Tube Co.	Lorain, Ohio	AC
61	400	350	230	d.c.	Tube Reeling Drive	Geared	1927	National Tube Co.	Lorain, Ohio	AC
62	400	400–450	220	d.c.	8" Merchant Mill	Direct	1911	Illinois Steel Co.	Milwaukee, Wis.	W
63	400	400–800	230	d.c.	Cold Strip Mill	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
64	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
65	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
66	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
67	400	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Central Alloy Steel Co.	Massillon, Ohio	GE
68	400	400–800	230	d.c.	Cold Mill	Geared	1927	American Sheet & Tin Plate Co.	McKeesport, Pa.	GE
69	400	480	440	25	Merchant Mill	Geared	1927	Bethlehem Steel Co.	Lackawanna, N. Y.	CW
70	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
71	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
72	400	500–1000	600	d.c.	Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
73	400	500–1000	600	d.c.	Strip Mil,	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
74	400–200	800–400	230	d.c.	Copper Sheet Mill	Geared	1925	Rome Brass & Copper Co.	Rome, N. Y.	GE
75	450	200–400	230	d.c.	26" x 72" Sheet Zinc Mill	Geared	1924	Illinois Zinc Co.	Peru, Illinois	W
76	450	211–422	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
77	450	211–422	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
78	450	400–650	230	d.c.	Rod (1 Stand) No. 2	Direct	1913	American Steel & Wire Co.	Worcester, Mass.	W
79	450	450–600	230	d.c.	12" Cold Rolls (2 Tandem Stands Roughing)	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
80	450	450–600	230	d.c.	12" Cold Rolls (2 Tandem Stands Roughing)	Geared	1915	Superior Steel Co.	Carnegie, Pa.	W
81	450	550–750	230	d.c.	Zinc Strip Mills	Geared	1925	Matthiesen & Hegeler Zinc Co.	LaSalle, Ill.	CW
82	500	130–310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
83	500	150–225	250	d.c.	12" Merchant Mill	Direct	1919	Natl. Farming Machinery, Ltd.	Montmagny, P. Q.	W
84	500	150–550	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
85	500	155–500	250	d.c.	Tyre Mill	Direct	1923	McConway Torley Co.	Pittsburgh, Pa.	W
86	500	175–350	250	d.c.	12" Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
87	500	175–350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
88	500	175–350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
89	500	175–350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
90	500	180–360	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Corp.	Benwood, W. Va.	GE
91	500	200–400	250	d.c.	10" Cont. Rolling Mill	Coupled	1925	Republic Iron & Steel Co.	Youngstown, Ohio	AC
92	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
93	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
94	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
95	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
96	500	220–400	550	d.c.	Brass Mill	Geared	1913	Scoville Mfg. Co.	Waterbury, Conn.	W
97	500	250–325	230	d.c.	8" Hoop Mill	Direct	1909	Atlantic Steel Co.	Atlanta, Ga.	GE
98	500	250–500	230	d.c.	9" Hoop Mill (Finishing)	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
99	500	250–350	600	d.c.	9" Merchant Mill	Direct	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
100	500	250–600	250	d.c.	12"-9" Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
101	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
102	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
103	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
104	500	267–800	230	d.c.	Hot Merchant Mill	Direct	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
105	500	267–800	230	d.c.	Hot Merchant Mill	Geared	1926	Bourne Fuller Co.	Cleveland, Ohio	GE
106	500	267–800	230	d.c.	Merchant Mill	Geared	1927	Allegheny Steel Co.	Brackenridge, Pa.	GE
107	500	300–450	230	d.c.	Lap Welding Mill	Coupled		Gary Tube Co.	Gary, Ind.	AC
108	500	400–600	230	d.c.	Hoop Mill	Geared	1920	Atlantic Steel Co.	Atlanta, Ga.	GE
109	500	400–800	230	d.c.	Cold Strip Mill	Geared	1927	Newton Steel Co.	Newton Falls, Ohio	W
110	500	400–800	230	d.c.	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
111	500	400–800	230	d.c.	Tube Reeling Mill	Geared	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	GE
112	500	400–800	230	d.c.	14" Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
113	500	400–800	230	d.c.	14" Tandem Copper Mill	Geared	1927	Rome Brass & Copper Co.	Rome, N. Y.	GE
114	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
115	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
116	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
117	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
118	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
119	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
120	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
121	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
122	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
123	500	400–800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
124	550	120–300	250	d.c.	10" Merchant Mill	Direct	1923	Firth Sterling Steel Co.	McKeesport, Pa.	W
125	550	336–588	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
126	550	420–714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
127	550	420–714	600	d.c.	9" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
128	600	150–250	575		6" Hot Strip Mill	Direct	1913	American Steel & Wire Co.	Cleveland, Ohio	GE
129	600	185–470	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
130	600	200–300	230	d.c.	9" Merchant Mill	Direct	1914	United Alloy Steel Corporation	Canton, Ohio	W
131	600	200–300	230	d.c.	9" (Finishing Train) Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
132	600	225–425	550	d.c.	12" Hot Strip Mill	Direct	1916	American Steel & Wire Co.	Cleveland, Ohio	GE
133	600	270–635	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W

DIRECT CURRENT ADJUSTABLE SPEED DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd By
134	600	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
135	600	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
136	600	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
137	600	400-800	250	d.c.	18" Merchant Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
138	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
139	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
140	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
141	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
142	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
143	650	225-400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
144	650	225-400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
145	650	225-400	600	d.c.	Piercing Mill	Geared	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
146	700	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
147	700	130-310	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
148	700	210-660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
149	700	210-660	600	d.c.	10" Merchant Mill	Direct	1926	Illinois Steel Co.	Gary, Ind.	GE
150	700	240-450	250	d.c.	9" Merchant Mill	Direct	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
151	700	300-400	230	d.c.	Lap Welding Mill	Coupled	1923	Gary Tube Co.	Gary, Ind.	AC
152	720-900	160-200	220	d.c.	Wheel Mill	Geared	1906	Bethlehem Steel Co.	Johnstown, Pa.	GE
153	720	395-825	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
154	720	480-1000	600	d.c.	10" Strip Mill	Direct	1926	LacLede Steel Co.	Alton, Ill.	W
155	750	120-210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
156	750	120-210	250	d.c.	14" Finishing Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
157	750	150-250	600		14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
158	750	190-375	245	d.c.	Pontoon Mill	Coupled	1927	M. W. Kellogg Co.	Jersey City, N. J.	CW
159	750	190-375	245	d.c.	Pontoon Mill	Coupled	1927	M. W. Kellogg Co.	Jersey City, N. J.	CW
160	750	235-325	230		Piercing Mill	Geared	1914	Pittsburgh Seamless Tube Co.	Beaver Falls, Pa.	GE
161	750	300-600	230	d.c.	Cold Rolling Mill	Geared	1924	International Nickel Co.	Huntington, W. Va.	AC
162	750	300-600	230	d.c.	Bliss Cold Roll Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
163	750-750	360-860	600	d.c.	14" Continuous Mill	Geared	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
164	800	140-510	†600	d.c.	10" Rod Mill	Direct	1927	American Steel & Wire Co.	Worcester, Mass.	W
165	800	140-510	†600	d.c.	10" Rod Mill	Direct	1927	American Steel & Wire Co.	Worcester, Mass.	W
166	800	175-350	†600	d.c.	12" Alloy Bar Mill	Direct	1927	Illinois Steel Co.	S. Chicago, Ill.	GE
167	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
168	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
169	800	250-300	500	d.c.	Piercing Mill	Direct	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
170	800	200-300	500	d.c.	Piercing Mill	Rope	1912	Pittsburgh Steel Products Co.	Monessen, Pa.	W
171	800	200-400	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
172	800	200-400	250	d.c.	9" 7 Stand Mill	Coupled	1926	Crucible Steel Co. of America	Harrison, N. J.	AC
173	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
174	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
175	800	200-415	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
176	800	200-600	500	d.c.	10" Merchant Rod & Strip Mill	Geared	1927	Ford Motor Co.	Detroit, Mich.	W
177	800	210-315	575		6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
178	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
179	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
180	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
181	800	231-462	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
182	800	240-480	600	d.c.	12" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE
183	800	250-500	230	d.c.	14" and 9" Hoop Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
184	800	256-512	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
185	800	250-750	600	d.c.	14" Hot Strip Mill	Direct	1927	Trumbull Steel Co.	Warren, Ohio	GE
186	800	260-390	575		6" Hot Strip Mill	Direct	1907	American Steel & Wire Co.	Cleveland, Ohio	GE
187	800	275-550	600		14" Hot Strip Mill	Direct	1920	Trumbull Steel Co.	Warren, Ohio	GE
188	800	275-550	700		12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
189	800	275-550	700		12" Merchant Mill	Geared	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
190	800	275-550	700		9" Merchant Mill	Direct	1925	Penn Seaboard Steel Co.	New Castle, Del.	GE
191	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
192	800	350-600	230	d.c.	Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	CW
193	800	350-750	600		Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
194	800	350-700	600	d.c.	20" Merchant Mill (Breakdown)	Geared	1921	Driver Harris Co.	Harrison, N. J.	W
195	800	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
196	800	360-440	500	d.c.	Aluminum Mill	Geared	1919	U. S. Aluminum Co.	Marysville, Tenn.	W
197	800	370-400	650	d.c.	Aluminum Mill	Direct	1917	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
198	800	370-400	650	d.c.	Aluminum Mill	Direct	1919	U. S. Aluminum Co.	Niagara Falls, N. Y.	W
199	800	400-600	600	d.c.	16" Merchant Mill	Geared	1921	Missouri Rolling Mill Co.	St. Louis, Mo.	W
200	800	410-720	230	d.c.	16" Merchant Mill (Rougher)	Geared	1923	Timken Roller Bearing Co.	Canton, Ohio	W
201	800-363	320-706	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
202	800-363	320-706	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
203	300-363	320-706	600		10" Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
204	800	535-750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
205	800	535-750	600	d.c.	10" Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
206	850	250-500	250	fd.c.	10" Rod Mill	Direct	1927	Washburn Wire Co.	Phillipsdale, R. I.	W
207	900	425-640	250	d.c.	12"-10" Mill	Coupled	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
208	975-375	650-250	600	d.c.	Rod (Roughing) Mill	Geared	1922	Atlantic Steel Co.	Atlanta, Ga.	W
209	975-510	865-450	600	d.c.	Rod (Finishing) Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
210	1000	200-480	250	d.c.	12"-9" Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
211	1000	200-480	250	d.c.	12"-9" Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
212	1000-2000	200-400-600	250	d.c.	12"-10" Gautier Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
213	1000	210-510	230	d.c.	Bar Mill	Geared	1925	Donner Steel Co.	Buffalo, N. Y.	W
214	1000	200-600	600	d.c.	10" Merchant Mill	Geared	1925	McKinney Steel Co.	Cleveland, Ohio	W
215	1000	290-500	600	d.c.	9" Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Indiana	GE
216	1000	300-400	230	d.c.	Lap Welding Mill			Gary Tube Co.	Gary, Ind.	AC
217	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
218	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
219	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
220	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
221	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
222	1000	518-800	250	d.c.	20" Merchant Mill	Geared	1919	Natl. Farming Machinery Ltd.	Montmagny, P. Q.	W
223	1100	214-320	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
224	1100	240-382	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
225	1200	150-250	230		12" Merchant Mill	Direct	1920	Timken Roller Bearing Co.	Canton, Ohio	GE
226	1200	160-320	250	d.c.	12" Merchant Mill	Direct	1926	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
227	1200	200-400	230	d.c.	14" Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
228	1200	200-400	230	d.c.	14" Band Mill	Direct	1926	Sharon Steel Hoop Co.	Sharon, Pa.	W
229	1200	300-500	600	d.c.	10" Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
230	1250	175-400	230	d.c.	Rod Mill	Direct	1915	United Alloy Steel Corp.	Canton, Ohio	W
231	1250	175-350	600		14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
232	1250	175-350	600		14" Hot Strip Mill	Geared	1920	Trumbull Steel Co.	Warren, Ohio	GE
233	1250	300-550	500	d.c.	10" Merchant Mill	Direct	1927	Ford Motor Co..	Detroit, Mich.	W
234	1400	450-550	500	d.c.	12" Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
235	1500	50-80	600		Cont. Merchant Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
236	1500	100-125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
237	1500	100-125	220	d.c.	Light Rail Mill	Direct	1905	Carnegie Steel Co.	Bessemer, Pa.	W
238	1500	100-150	600		14" Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE

DIRECT CURRENT ADJUSTABLE SPEED DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
239	1500	125–250	230	d.c.	14″ Band Mill	Direct	1914	Sharon Steel Hoop Co.	Sharon, Pa.	W
240	1500	125–250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
241	1500	125–250	240	d.c.	Strip Mill	Geared	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
242	1500	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
243	1500	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
244	1500	198–100	600	d.c.	10″ Strip Mill	Rope & Direct	1926	LacLede Steel Co.	Alton, Ill.	W
245	1500	200–400	600	d.c.	20″–16″ Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
246	1500	200–300	600		10″ Merchant Mill	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
247	1500	280–420	600		20″ Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
248	1500	280–420	600		20″ Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
249	1500	280–420	600		20″ Hot Strip Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
250	1500	450–550	600		Rod Mills Nos. 16 to 18	Direct	1925	Colorado Fuel & Iron Co.	Minnequa, Colo.	GE
251	1500	470–510	230	d.c.	Rod Mill	Direct	1923	John A. Roebling Sons	New York, N. Y.	W
252	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Co. of Canada	Hamilton, Ont.	W
253	1600	210–420	525	d.c.	Rod Mill	Geared	1913	Steel Co. of Canada	Hamilton, Ont.	W
254	1700	90–140	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
255	1700	90–205	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
256	1700	250–500	250	d.c.	12″–10″ Mill	Geared	1925	Bethlehem Steel Co.	Johnstown, Pa.	AC
257	1750	100–200	500	d.c.	12″ Spring Mill	Coupled	1926	Ford Motor Co., Fordson Plant	Detroit, Mich.	AC
258	1750	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
259	1800	115–230	600		20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
260	1800	115–230	600		20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
261	1800	115–230	600		20″ Hot Strip Mill	Direct	1922	Otis Steel Co.	Cleveland, Ohio	GE
262	1800	125–250	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
263	1800	125–250	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
264	1800	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
265	1800	165–350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
266	1800	165–350	240	d.c.	Strip Mill	Direct	1922	West Leechburg Steel Co.	Leechburg, Pa.	W
267	1800	185–370	600	d.c.	20″–16″ Hot Strip Mill	Geared	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
268	1800	185–370	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
269	1800	185–370	600	d.c.	20″–16″ Hot Strip Mill	Direct	1925	Acme Steel Goods Co.	Riverdale, Ill.	W
270	1800	200–400	600		Cont. Merchant Mill	Geared	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
271	1800	275–550	600	d.c.	12″ Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
272	1800	275–550	600	d.c.	12″ Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
273	1800	350–640	500	d.c.	18″ Rougher Mill	Geared	1926	Pittsburgh Crucible Steel Co.	Midland ,Pa.	AC
274	1800	550–650	250	d.c.	22″ Merchant Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	GE
275	1850	575–221	600	d.c.	Rod Mill	Direct & Belted	1922	Atlantic Steel Co.	Atlanta, Ga.	W
276	2000	85–165	600		21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
277	2000	85–165	600		21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
278	2000	85–165	600		21″ Cont. Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
279	2000	134–275	600	d.c.	10″ Merchant Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	W
280	2000	137½–275	500	d.c.	10″ Merchant-Rod & Strip Mill	Direct	1927	Ford Motor Co.	Detroit, Mich.	W
281	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
282	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
283	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
284	2000	200–400	600	d.c.	Hot Strip Mill	Geared	1926	Columbia Steel Co.	Butler, Pa.	GE
285	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
286	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
287	2000	200–400	600	d.c.	14″-12″ Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
288	2000	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
289	2000	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
290	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
291	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
292	2000	230–460	600	d.c.	Merchant Mill	Direct	1925	International Harvester Co.	Chicago, Ill.	W
293	2000	230–460	600	d.c.	Sheet Mill	Geared	1926	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
294	2000	230–460	600	d.c.	10″ Rod Mill	Geared	1927	American Steel & Wire Co.	Worcester, Mass.	W
295	2000–1700	210–680	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
296	2000	260–800	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
297	2000	300–500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
298	2000	300–500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio.	W
299	2000	300–500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
300	2000	315–500	600	d.c.	10″ Merchant Mill	Geared	1926	Illinois Steel Co.	Gary, Ind.	GE
301	2100	150–310	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
302	2100–1600	150–460	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
303	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
304	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary Ind.	W
305	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
306	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
307	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
308	2500	160–320	600	d.c.	Continuous Sheet Mill	Geared	1926	American Sheet & Tinplate Co.	Gary, Ind.	W
309	2500	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
310	2500	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
311	2500	200–400	600	d.c.	Strip Sheet Mill	Direct	1926	Weirton Steel Co.	Weirton, W. Va.	GE
312	2600	320–275	600	d.c.	26″ & 21″ Cont. Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
313	2870–1435	200–400	600		10″ Rod Mill	Geared	1922	Wheeling Steel Corp.	Portsmouth, Ohio	GE
314	3000	40–100	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
315	3000	125–200	600	d.c.	Piercing Mill	Direct	1925	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
316	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
317	3000	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Johnstown, Pa.	AC
318	3000	180–370	600	d.c.	10″ Wire Rod Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	W
319	3000	180–360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
320	3000	170–360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
321	3000	180–360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
322	3000	180–360	600	d.c.	Hot Strip Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
323	3000	200–360	600		14″ Mill	Direct	1924	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
324	3000	325–485	600	d.c.	24″ Structural Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
325	3200	50–120	700	d.c.	28″ Structural Mill	Direct	1915	Inland Steel Co.	Indiana Harbor, Ind.	W
326	3500	150–300	230	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Corp.	Lackawanna, N. Y.	AC
327	3600	150–300	250	d.c.	18-14″ Structural Mill	Direct	1924	Bethlehem Steel Co.	Lackawanna, N. Y.	AC
328	4500	67.5–110	500		14″ Merchant Mill	Direct	1923	Ford Motor Co.	Detroit, Mich	GE
329	4500	120–255	750	d.c.	Universal Skelp Mill	Coupled	1925	Gary Tube Co.	Gary, Ind.	AC

BAR AND BILLET MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	250	440	25 cy.	Cogging Mill	Geared	1910	Simonds Mfg. Co.	Lockport, N. Y.	GE
2	300	375	2200	25 cy.	Bar Mill	Coupled		Bethlehem Steel Co.	Johnstown, Pa.	AC
3	300	375	2200	25 cy	10" Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
4	300	400	550	60 cy.	14" Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
5	300	450	230	d.c.	Bar Mill	Geared	1916	Carbon Steel Co.	Pittsburgh, Pa.	W
6	300	450	550	60 cy.	Bar Mill	Coupled	1921	Nat'l Conduit & Cable Co.	Hast. on Hudson, N.Y	AC
7	300	514	2200	60 cy.	Bar Mill	Geared	1915	C. G. Hussey	Pittsburgh, Pa.	AC
8	300-300-150	600-400-300	440	60 cy.	Bar Mill	Chain	1916	Vulcan Crucible Steel Co.	Aliquippa, Pa.	GE
9	300	600	2300	60 cy.	12" Billet Mill	Geared	1916	Tenn. Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
10	300	720	440	60 cy.	Bar Mill	Geared	1920	Hoskins Mfg. Co.,	Detroit, Mich.	AC
11	300	750	2200	25 cy.	10" Bar Mill	Geared	1923	Bethlehem Steel Co.	Lebanon, Pa.	GE
12	335	360	2200	60 cy.	Bar Mill	Geared	1915	Heppenstall Forge & Knife Co.	Pittsburgh, Pa.	GE
13	350	125	6600	25 cy.	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
14	350-350	360-240	440	60 cy.	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
15	350	600	2200	60 cy.	Bar Mill	Belted	1920	Joslyn Mfg. Co.	Chicago, Ill.	AC
16	400-400	107-64	2200	25 cy.	16" Bar Mill	Direct	1914	Bethlehem Steel Co.	Lebanon, Pa.	GE
17	400	400	400	60 cy.	Bar Mill	Chain	1918	Latrobe Steel Co.	Latrobe, Pa.	AC
18	400	440	4000	60	Billet Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
19	400	450	2200	60 cy.	12" Bar Mill	Geared	1924	Atchison, Topeka & Santa Fe Ry.	Chicago, Ill.	AC
20	400	450	2200	60 cy.	9" Bar Mill	Geared	1924	Atchison, Topeka & Santa Fe Ry.	Chicago, Ill.	AC
21	400	514	2200	60 cy.	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
22	400-225	600-300	550	40 cy.	Bar Mill	Geared	1909	Ludlum Steel Co.	Watervliet, N. Y.	GE
23	400	705	2200	60 cy.	16" Cogging Mill	Geared	1923	Crucible Steel Co. of America	Park Works, Pgh., Pa	W
24	400	720-450	2200	60 cy.	Bar Mill	Geared	1917	Cyclops Steel Co.	Titusville, Pa.	AC
25	400-265	875-585	2200	60 cy.	Bar Mill	Geared	1913	Old Dominion Iron & Nail Co.	Richmond, Va.	W
26	400	900	2200	60	Bar and Billet Mill	Geared	1925	Crucible Steel Co.	Pittsburgh, Pa.	W
27	450	125	6600	25 cy.	12" Bar Mill	Direct	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
28	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
29	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
30	500	175-350	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
31	500	250	440	25 cy.	10" Bar Mill	Geared	1917	Simonds Mfg. Co.	Lockport, N. Y.	GE
32	500	300	2200	60 cy.	Bar Mill	Coupled	1920	Ft. Wayne Rolling Mill Co.	Ft. Wayne, Ind.	AC
33	500	360	2200	60 cy.	16" Bar Mill	Geared	1915	Tenn. Coal, Iron & R. R. Co.	Bessemer, Ala.	GE
34	500	440	2200	60	Bar Mill	Geared	1924	Universal Steel Co.	Bridgeville, Pa.	AC
35	500	440	4000	60	Bar Mill	Coupled	1923	Bryden Neverslip Co.	Catasauqua, Pa.	AC
36	500	450	440	60 cy.	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
37	500	450	440	60 cy.	Bar Mill	Geared	1910	Chase Rolling Mills Co.	Waterbury, Conn.	GE
38	500	450	440	60 cy.	16" Bar Mill	Geared	1914	Carbon Steel Co.	Pittsburgh, Pa.	GE
39	500	450	2200	60 cy.	Billet Mill	Geared	1915	International High Speed Steel Co	Rockaway, N. J.	GE
40	500	450	2200	60	Bar Mill	Geared	1925	Indianapolis Steel Products Co.	Indianapolis, Ind.	AC
41	500	500	2200	25 cy.	16" Bar Mill	Geared	1919	Hammond Steel Co.	Solvay, N. Y.	GE
42	500	514	2200	60 cy.	Bar Mill	Rope	1917	Henry Disston & Son	Philadelphia, Pa.	AC
43	500	514	2200	60 cy.	Bar Mill	Geared	1920	Metals Production Equip. Co.	Springfield, Mass.	AC
44	500	514	2200	60 cy.	Bar Mill	Geared	1920	Metals Production Equip. Co.	Springfield, Mass.	AC
45	500	514	2200	60 cy.	Bar Mill	Geared	1929	Metals Production Equip. Co.	Springfield, Mass.	AC
46	500	514	440	60 cy.	Bar Mill	Chain	1915	Simmons Mfg. Co.	Kenosha, Wis.	AC
47	500	514	2200	60 cy.	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
48	500	600	2200	60 cy.	Bar Mill	Belted	1919	Joslyn Mfg. Co.	Chicago, Ill.	AC
49	600	171	440	40 cy.	Bar Mill	Geared	1910	Ludlum Steel Co.	Watervliet, N. Y.	GE
50	600	300	2200	25 cy.	Muck Mill	Chain	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
						Coupled	1914			
51	600-600	300-214	2200	25 cy.	Bar Mill	& Rope	1914	St. Louis Screw Co.	St. Louis, Mo.	AC
52	600	300-214	2200	25 cy.	Bar Mill	Chain		St. Louis Screw Co.	St. Louis, Mo.	AC
53	600	300-330	250	d.c.	10" Bar Mill	Coupled	1921	Universal Steel Company	Bridgeville, Pa.	CW
54	600	368	6600	25 cy.	18-21" Bar (Rough.) Mill	Geared	1924	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
55	600	490	2200	25 cy.	16" Bar (Roughing) Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
56	600	514	2200	60	18" Bar Mill	Geared	1926	American Nickel Corp.	Hyde, Pa.	GE
57	600-300	600-300	550	60	9" Bar Mill No. 2	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
58	700	250	2200	25 cy.	18" Bar Mill	Rope	1911	Dilworth Porter Co.	Pittsburgh, Pa.	GE
59	700	390	2200	60 cy.	18" Bar Mill	Geared	1922	Dilworth Porter Co.	Pittsburgh, Pa.	W
60	700	600	2200	60	14" Bar Mill	Coupled	1921	Universal Steel Company	Bridgeville, Pa.	CW
61	750	120-210	250	d.c.	14" Bar Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
62	750	120-210	250	d.c.	14" Bar Mill	Coupled	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	AC
63	750-750	225-168	440	60 cy.	Bar Mill	Coupled	1921	Simmons Mfg. Co.	Kenosha, Wis.	AC
64	750	250	2200	25 cy.	Bar Mill	Geared	1914	Bethlehem Steel Co.	Johnstown, Pa.	AC
65	750	250	440	25 cy.	Bar Mill	Coupled	1920	Simonds Mfg. Co.	Lockport, N. Y.	AC
66	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
67	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
68	800	175-350	600	d.c.	12" Alloy Bar Mill	Direct	1927	Illinois Steel Co.	S. Chicago, Ill.	GE
69	800	220-150	2200	25 cy.	12" Bar (Finishing) Mill	Direct	1919	Scullin Steel Co.	St. Louis, Mo.	W
70	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
71	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
72	800	220-440	600	d.c.	12" Alloy Bar Mill	Direct	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
73	800	250	2200	60 cy.	22" Bar Mill	Rope	1915	Timken Roller Bearing Co.	Canton, Ohio	W
74	800	257	2200	60 cy.	Bar Mill	Geared	1914	Standard Seamless Tube Co.	Economy, Pa.	GE
75	800	277	2200	60 cy.	Bar Mill	Geared	1918	Pacific Coast Steel Co.	San Francisco, Calif.	AC
76	800	292	2200	25 cy.	18" Tandem Billet Mill	Direct	1912	Laclede Steel Co.	Alton, Ill.	W
77	800	350	2200	60 cy.	Billet Mill	Geared	1915	Milton Manufacturing Co.	Milton, Pa.	W
78	800	514	2200	60 cy.	Bar Mill	Geared	1919	Judson Mfg. Co.	Oakland, Calif.	AC
79	800-400	360-180	550	40 cy.	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
80	800-400	360-180	550	40 cy.	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
81	800-400	360-180	550	60	Bar Mi	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
82	800-400	360-180	550	60	Bar Mill	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
83	800	730-365	2200	50 cy.	22" Bar Mill	Geared	1916	Columbia Steel Co.	Los Angeles, Cal.	W
84	800	880-490	2200	60 cy.	16" Bar Mill	Geared	1920	Knoxville Iron Co.	Knoxville, Tenn.	W
85	850	505	2200	60 cy.	24" Bar (Roughing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
86	1000-400	257-128	550	60	9" Bar Mill No. 1	Geared	1926	Ludlum Steel Co.	Watervliet, N. Y.	GE
87	1000	277	2200	60 cy.	22" Bar Mill	Geared	1919	Pennsylvania Forge Co.	Philadelphia, Pa.	GE
88	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
89	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chidcago, Ill.	GE
90	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
91	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
92	1000	350-700	600	d.c.	12" Alloy Bar Mill	Geared	1926	Illinois Steel Co.	So. Chicago, Ill.	GE
93	1000	375	2200	25 cy.	Bar Mill	Geared	1913	Bethlehem Steel Co.	Johnstown, Pa.	AC
94	1000	450	2200	60 cy.	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
95	1000	710	2200	60	20" Special Bar	Geared	1925	Rail Joint Company	Troy, N. Y.	W
96	1000	710	2200	60	20" Special Bar	Geared	1925	Rail Joint Company	Troy, N. Y.	W
97	1200-1000-800	450-375-300	6600	25 cy.	18" Bar Mill, No. 16	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
98	1200	505	2200	60 cy.	Bar (Roughing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
99	1200	514	2200	60 cy.	Bar Mill	Geared	1917	Elyria Iron & Steel Co.	Elyria, Ohio	AC
100	1250	375	2080	25 cy.	18" Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
101	1250	375	2080	25 cy.	18" Billet Mill	Geared	1918	Wickwire Spencer Steel Co.	Buffalo, N. Y.	GE
102	1400	505	2200	60 cy.	14" Billet Mill	Geared	1917	Wickwire Spencer Steel Corp.	Palmer, Mass.	W
103	1500	182-162	6600	25 cy.	10" Bar Mill	Direct	1913	Carnegie Steel Co.	Duquesne, Pa.	W
104	1500	266	6400	25 cy.	Billet Mill	Geared	1916	American Steel & Wire Co.	Cleveland, Ohio	W
105	1500	270	2200	60 cy.	22" Bar and Billet Mill	Geared	1918	Central Steel Co.	Massillon, Ohio	W
106	1500	440	2200	60 cy.	22" Bar Mill	Geared	1919	Kansas Bolt & Nut Co.	Kansas City, Mo.	W
107	1500	450	2200	60 cy.	Bar Mill	Rope	1919	Pacific Coast Steel Co.	Seattle, Wash.	AC
108	1500	450	2200	60 cy.	Roughing Mill	Geared	1919	Pacific Coast Steel Co.	San Francisco, Calif.	AC

BAR AND BILLET MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
109	1500	705	2200	60 cy.	24″ Bar (Finishing) Mill	Geared	1922	Youngstown Steel Co.	Youngstown, Ohio	W
110	1500	705	2200	60 cy.	22″ Bar Mill	Geared	1924	Atchison, Topeka & Santa Fe Ry.		AC
111	1500	735	2200	25 cy.	Bar Mill	Geared	1923	Scullin Steel Co.	St. Louis, Mo.	AC
112	1600	150	6600	25 cy.	Bar Mill	Direct	1912	Pittsburgh Crucible Steel Co.	Pittsburgh, Pa.	GE
113	1600	257	2200	60 cy.	14″ Cont. Billet Mill	Geared	1912	Atlantic Steel Co.	Atlanta, Ga.	GE
114	1650–1500–1350	413–375–337	6600	25 cy.	10″ Bar Mill, No. 10	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
115	1750	70–120	600	d.c.	29″ Reversing Billet Mill	Direct	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
116	1800	75	6600	25 cy.	30″ Billet Mill	Direct	1914	Bethlehem Steel Co.	Bethlehem, Pa.	GE
117	1800	366	2200	25 cy.	22″ Billet and Struct. Mill	Geared	1919	Scullin Steel Co.	St. Louis, Mo.	W
118	1800–1800–1800	370–300–247	6600	60 cy.	Sheet Bar Mill	Geared	1920	American Rolling Mill Co.	Ashland, Ky.	GE
119	1850–1450– 925	120– 94– 60	6600	25 cy.	16″ Hand Bar Mill	Direct	1921	Bethlehem Steel Co.	Lackawanna, N. Y.	GE
120	2000	50–100	600	d.c.	30″ Reversing Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, Ohio	W
121	2000	214	6600	25 cy.	40″ Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
122	2000	214	6600	25 cy.	40″ Billet Mill	Geared	1907	Illinois Steel Co.	Gary, Ind.	GE
123	2000	240	2200	60 cy.	18″ Sheet Bar Mill	Geared	1920	Nat. Enameling & Stamping Co.	Granite City, Ill.	GE
124	2150	50–100	535	d.c.	Reversing Bar Mill	Direct	1926	Standard Seamless Tube Co.	Economy, Pa.	GE
125	2200–2000–1800	275–250–225	6600	25 cy.	10″ Bar Mill, No. 15	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
126	2200	505–303	2200	60 cy.	18″ Bar (Finishing) Mill	Geared	1919	Central Steel Co.	Massillon, Ohio	W
127	2400	505	2200	60	22″ Bar Mill	Geared	1926	Pacific Coast Steel Co.	Seattle, Wash.	W
128	2500	150	6600	25 cy.	28″ Billet Mill	Geared	1923	Pittsburgh Crucible Steel Co.	Midland, Pa.	GE
129	2500	240	2200	60 cy.	24″ Sheet Bar Mill	Geared	1920	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	GE
130	2500	295	2200	60	18″ Cont. Billett Mill	Geared	1926	American Steel & Wire Co.	Worcester, Mass.	AC
131	2500	500	2200	60 cy.	22″ Bar Mill	Geared	1923	Phoenix Iron Co.	Phoenixville, Pa.	W
132	2750–2500–2250	275–250–225	6600	25 cy.	14″ Bar Mill, No. 14	Geared	1916	Carnegie Steel Co.	Youngstown, Ohio	GE
133	3000	70–150	750	d.c.	24″ Bar Mill	Direct	1925	Inland Steel Co.	Indiana Harbor, Ind.	GE
134	3000	70–175	750	d.c.	24″ Bar Mill	Direct	1927	Inland Steel Corp.	Ind. Harbor, Ind.	GE
135	3000	250	6600	25 cy.	18″ Cont. Billet Mill	Geared	1913	Bethlehem Steel Co.	Bethlehem, Pa.	GE
136	3000	375	2200	25 cy.	18″ Billet Mill	Geared	1916	Donner Steel Co.	Buffalo, N. Y.	GE
137	3000	375	6600	25 cy.	24″ Sheet Bar Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	GE
138	3250	94	6600	25 cy.	18″ Sheet Bar Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
139	3500	92	2200	60 cy.	18″ Sheet Bar Mill	Direct	1916	Trumbull Steel Co.	Warren, Ohio	GE
140	3500	92	2200	60 cy.	21″ Sheet Bar Mill	Direct	1918	Trumbull Steel Co.	Warren, Ohio	GE
141	3500	390	2200	60	Continuous Billet Mill	Geared	1920	Steel Co. of Canada	Hamilton, Ont.	W
142	4000	83	6600	25 cy.	24″ Cont. Billet Mill	Direct	1916	Bethlehem Steel Co.	Sparrows Pt., Md.	GE
143	4000	93	6600	60 cy.	18″ Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
144	4000	93	6600	60 cy.	21″ Continuous Bar Mill	Direct	1919	Weirton Steel Co.	Weirton, W. Va.	W
145	4000	360	2200	60 cy.	21″ Sheet Bar Mill	Geared	1917	Sharon Steel Hoop Co.	Lowellville, Ohio	GE
146	4000	450	2200	60	24″ Cont. Billet Mill	Geared	1927	Carnegie Steel Co.	Farrell, Pa.	W
147	4200	93	2200	60 cy.	Continuous Bar Mill	Direct	1915	United Alloy Steel Corporation	Canton, Ohio	W
148	5000	99	13200	60	18″ Billet Mill	Direct	1925	Ford Motor Company	Detroit, Mich.	W
149	5000	450	2300	60 cy.	18″ Cont. Sheet Bar & Billet Mill	Geared	1919	Wheeling Steel Corp.	Portsmouth, Ohio	GE
150	5000	594	6600	60 cy.	Sheet and Billet Mill	Geared	1924	Tenn. Coal, Iron & R. R. Co.	Birmingham, Ala.	GE
151	5750	94	6600	25 cy.	21″ Cont. Billet Mill	Direct	1914	McKinney Steel Co.	Cleveland, Ohio	GE
152	5750	94	6600	25 cy.	18″ Bar Mill	Direct	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
153	5750	94	6600	25 cy.	21″ Bar Mill	Direct	1921	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
154	5750	94	6600	25 cy.	18″ Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
155	5750	94	6600	25 cy.	21″ Billet Mill	Geared	1923	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
156	6000	83	6600	25 cy.	32″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
157	6000	83	6600	25 cy.	24″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
158	6000	83	6600	25 cy.	18″ Billet Mill	Direct	1907	Illinois Steel Co.	Gary, Ind.	GE
159	6000	83	6600	25 cy.	18″ Sheet Bar Mill	Direct	1910	Illinois Steel Co.	Gary, Ind.	GE
160	6000	294	2200	60	Billet Mill	Geared	1927	Interstate Iron & Steel Co.	Chicago, Ill.	AC
161	6250	368	2200	25 cy.	24″ Cont. Billet Mill	Geared	1922	Inland Steel Co.	Indiana Harbor, Ind.	W
162	7500	375	2200	25	19″ Cont.Bar & Billet Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	W
163	9000	107	6600	25	Cont. Billet Bar Mill	Direct	1925	McKinney Steel Co.	Cleveland, Ohio	GE

COLD ROLL DRIVES

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	300	300	230	d.c.	Cold Roll Mill	Geared	1914	Trumbull Steel Co.	Warren, Ohio	W
2	300	300	230	d.c.	Cold Roll Mill	Geared	1920	Alan Wood Iron & Steel Co.	Conshohocken, Pa.	W
3	300	340	2200	60 cy.	Cold Roll Mill	Geared	1921	Newton Steel Co.	Newton Falls, Ohio	W
4	300	350	2200	60 cy.	Cold Roll Mill	Geared	1915	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
5	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Wheeling, W. Va.	W
6	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
7	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
8	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
9	300	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Wheeling Steel Corporation	Portsmouth, Ohio	W
10	300	352	2200	60 cy.	Cold Roll Mill	Direct	1923	Sharon Steel Hoop Co.	Youngstown, Ohio	W
11	300	353	2200	60 cy.	Cold Rolls	Geared	1923	Reeves Mfg. Co.	Dover, Ohio	GE
12	300	360	2200	60 cy.	Sheet Mill—Cold Rolls	Geared	1922	U. Alloy Steel Corp., Berger Div.	Canton, Ohio	GE
13	300	360	2300	60 cy.	Cold Rolls	Geared	1923	Ashtabula Steel Co.	Ashtabula, Ohio	GE
14	300	363	220	25 cy.	Cold Roll Mill	Geared	1919	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
15	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
16	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
17	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
18	300–300	400–800	230	d.c.	Cold Strip Mill	Geared	1913	Weirton Steel Co.	Weirton, W. Va.	GE
19	300–300	400–800	230	d.c.	20x24″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
20	300–300	400–800	230	d.c.	20x24″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
21	300–300	400–800	230	d.c.	20x24″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
22	300–300	400–800	230	d.c.	20x24″ Cold Strip Mill	Geared	1919	Trumbull Steel Co.	Warren, Ohio	GE
23	300	440	2200	60 cy.	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
24	300	440	2200	60 cy.	Cold Roll Mill	Geared	1924	Youngstown Sheet & Tube Co.	Youngstown, Ohio	W
25	300	485	2200	25 cy.	Cold Roll Mill	Direct	1916	Halcomb Steel Co.	Syracuse, N. Y.	W
26	300	514	550	60 cy.	14″ Cold Strip Mill	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
27	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
28	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
29	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
30	300	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
31	300	600	2200	60 cy.	Cold Sheet Mill Rolls	Geared	1923	Falcon Steel Co.	Niles, Ohio	GE
32	320	400–800	230	d.c.	Cold Strip Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
33	350	145	2206	60 cy.	Cold Roll Mill	Rope	1912	Massillon Rolling Mill Co.	Massillon, Ohio	W
34	350	345	440	60 cy.	Cold Roll Mill	Geared	1910	Oliver Iron & Steel Co.	Wilson, Pa.	W
35	350	360	2200	60 cy.	Sheet Mill—Cold Rolls	Geared	1919	Falcon Steel Co.	Niles, Ohio	GE
36	375	430–860	230	d.c.	20″ Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
37	375	430–860	230	d.c.	20″ Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
38	375	430–860	230	d.c.	20″ Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
39	375	430–860	230	d.c.	20″ Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W
40	375	430–860	230	d.c.	20″ Cold Roll Mill	Geared	1922	Otis Steel Co.	Cleveland, Ohio	W

COLD ROLL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
41	375	430-860	230	d.c.	Cold Strip Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
42	375	430-860	230	d.c.	Cold Strip Mill	Geared	1925	Otis Steel Co.	Cleveland, Ohio	GE
43	400	290	2200	60 cy.	Cold Roll Mill	Geared	1916	Youngstown Sheet & Tube Co.	Warren, Ohio	W
44	400	290	2200	60 cy.	Cold Roll Mill	Geared	1917	Liberty Steel Co.	Warren, Ohio	W
45	400	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
46	400	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1916	Mahoning Valley Steel Co.	Niles, Ohio	GE
47	400	360	2200	60 cy.	Cold Roll Sheet Mill	Geared	1918	Reeves Mfg. Co.	Canal Dover, Ohio	GE
48	400	360	440	60 cy.	Cold Strip Mill	Geared	1921	Am. Tube and Stamping Co.	Bridgeport, Conn.	GE
49	400	400-800	230	d.c.	Cold Strip Mill	Geared	1926	Trumbull Steel Co.	Warren, Ohio	GE
50	400	400-800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
51	400	400-800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
52	400	400-800	230	d.c.	Cold Strip Mill	Geared	1927	Trumbull Steel Co.	Warren, Ohio	GE
53	400	400-800	230	d.c.	Cold Strip Mill	Geared	1927	Central Alloy Steel Co.	Massillon, Ohio	GE
54	400	400-800	230	d.c.	Cold Mill	Geared	1927	American Sheet & Tin Plate Co.	McKeesport, Pa.	GE
55	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
56	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
57	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
58	400	500-1000	600	d.c.	Cold Strip Mill	Geared	1926	Forged Steel Wheel Co.	Butler, Pa.	AC
59	400	514	2200	60	Cold Mill	Geared	1927	American Rolling Mill Co.	Zanexville, Ohio	W
60	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
61	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
62	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
63	400	575	2200	60 cy.	Cold Roll Mill	Geared	1922	American Rolling Mill Co.	Ashland, Ky.	W
64	450	375	440	25	Cold Roll Mill	Geared	1925	Seneca Iron & Steel Co.	Blasdell, N. Y.	CW
65	450	514	550	60 cy.	14" Cold Strip MillP	Geared	1922	Wallingford Steel Co.	Wallingford, Conn.	GE
66	500	250	6600	25 cy.	Sheet Mill Cold Rolls	Geared	1919	Bethlehem Steel Co.	Sparrows Point, Md.	GE
67	500	350	2200	60 cy.	Cold Roll Mill	Geared	1916	Mansfield Sheet & Tin Plate Co.	Mansfield, Ohio	W
68	500	350	440	60 cy.	Cold Roll Mill	Geared	1916	Andrews Steel Co.	Newport, Ky.	W
69	500	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
70	500	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1920	Central Steel Co.	Massillon, Ohio	GE
71	500	360	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1920	Republic Iron & Steel Co.	Youngstown, Ohio	GE
72	500	400-800	230	d.c.	Cold Strip Mill	Geared	1927	Newton Steel Co.	Newton Falls, Ohio	W
73	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton, Steel Co.	Weirton, W. Va.	AC
74	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
75	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
76	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
77	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
78	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
79	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
80	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
81	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
82	500	400-800	600	d.c.	Cold Strip Mill	Geared	1927	Weirton Steel Co.	Weirton, W. Va.	AC
83	500	442	2200	60 cy.	Cold Roll Mill	Geared	1922	Follansbee Brothers Co.	Toronto, Ohio	W
84	500	450	550	60 cy.	12" Cold Roll Mill	Geared	1914	Worcester Pressed Steel Co.	Worcester, Mass.	GE
85	600	150	550	60 cy.	Sheet Mill, Cold Rolls	Rope	1909	Weirton Steel Co.	Weirton, W. Va.	GE
86	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
87	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
88	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
89	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
90	600	400-800	230	d.c.	Cold Strip Mill	Geared	1927	American Rolling Mill Co.	Ashland, Ky.	W
91	700	502	2200	60 cy.	Cold Roll Mill	Geared	1917	Carnahan Tin Plate & Sheet Co.	Canton, Ohio	W
92	750	100	2200	25 cy.	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
93	750	100	2200	25 cy.	Tin Mill, Cold Rolls	Geared	1915	American Sheet & Tin Plate Co.	Gary, Ind.	GE
94	750	125	2200	25 cy.	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
95	750	125	2200	25 cy.	Tin Mill, Cold Rolls	Rope	1915	McKeesport Tin Plate Co.	McKeesport, Pa.	GE
96	750	240	2200	60 cy.	Sheet Mill, Cold Rolls	Geared	1919	Wheeling Steel Corp.	Stuebenville, Ohio	GE
97	750	300-600	230	d.c.	Cold Rolling Mill	Geared	1924	International Nickel Co.	Huntington, W. Va.	AC
98	750	300-600	230	d.c.	Bliss Cold Roll Drive	Geared	1926	International Nickle Co.	Huntington, W. Va.	AC
99	800	375	2200	25 cy.	Sheet Mill, Cold Rolls	Geared	1919	Eastern Rolling Mills Co.	Baltimore, Md.	GE
100	1200	367	2200	25 cy.	Cold Roll Mill	Geared	1916	Bethlehem Steel Co.	Sparrows Point, Md.	W

SHEET BAR AND SKELP MILL DRIVES

No.	Horse Power	R.P.M.	Voltage	Current	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
1	350	500	230	d.c.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
2	500	180-360	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Corp.	Benwood, W. Va.	GE
3	550	575	2200	60 cy.	16" Skelp Mill	Geared	1919	Tyler Tube & Pipe Co.	Washington, Pa.	W
4	800	350	2200	60 cy.	24" Sheet Bar (B.H.) Mill	Geared	1915	Central Steel Co.	Massillon, Ohio	W
5	800	505	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
6	800	505	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
7	1000	125	230	d.c.	Sheet Bar Mill	Geared	1920	Allegheny Steel Co.	Brackenridge, Pa.	GE
8	1000	209	6600	25 cy.	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
9	1000	293	6600	25 cy.	14" Cont. Skelp Mi..	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
10	1000	600	2200	60 cy.	16" Skelp Mill	Geared	1923	Elyria Iron & Steel Co.	Elyria, Ohio	GE
11	1000	585	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
12	1200	705	6600	60	Bar Plate Mill	Geared	1927	American Rolling Mill	Middletown, Ohio	W
13	1100	214-320	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
14	1100	240-382	600	d.c.	12" Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
15	1250	294	6600	25 cy.	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
16	1500	234	2200	60 cy.	26" Sheet Bar Mill	Geared	1916	Canton Sheet Steel Co.	Canton, Ohio	W
17	1500	270	2200	60 cy.	24" Sheet Bar Mill	Geared	1914	Central Steel Co.	Massillon, Ohio	W
18	1500	270	2200	60 cy.	22" Sheet Bar, Billet Mill	Geared	1918	Central Steel Co.	Massillon, Ohio	W
19	1500	277	2200	60	22" Skelp Mill	Direct	1924	Bethlehem Steel Corp.	Coatesville, Pa	GE
20	1500	322-193	2200	60	18" Sheet Bar Mill	Geared	1926	Columbia Steel Co.	Pittsburgh, Calif.	W
21	1500	368	2200	25 cy.	Sheet Bar (Fin.) Mill	Geared	1923	Inland Steel Co.	Chicago, Ill.	W
22	1500	450	2200	30 cy.	3 High Skelp Mill	Geared	1915	Spang Chalfant Co.	Etna, Pa.	GE
23	1500	491	6600	25 cy.	14" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
24	1500	705	2200	60	Skelp Mill Scarfing Stand	Geared	1923	Bethlehem Steel Corp.	Coatesville, Pa.	AC
25	1800	275-550	600	d.c.	12" Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
26	1800	275-550	600	d.c.	12" Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	W
27	2000	50-100	600	d.c.	30" Rev. Sheet Bar Mill	Direct	1919	Follansbee Brothers Co.	Toronto, Ohio	W
28	2000	85-165	600	d.c.	21" Continuous Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
29	2000	85-165	600	d.c.	21" Continuous Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
30	2000	85-165	600	d.c.	21" Continuous Sheet Bar and Skelp Mill	Direct	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
31	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
32	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE
33	2000	200-400	600	d.c.	14"-12" Skelp Mill	Geared	1926	Wheeling Steel Co.	Benwood, W. Va.	GE

SHEET BAR AND SKELP MILL DRIVES—Continued

No.	Horse Power	R.P.M.	Voltage	Cycle	Type and Size of Mill	Method of Drive	Date of Purchase	Name of Plant	Location	Mfgd. By
34	2000	234-161	2200	60 cy.	10" Skelp (Fin.) Mill	Belted	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind'	W
35	2000-2000	250-161	6600	25 cy.	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
36	2000	294	6600	25 cy.	14" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
37	2000	300-500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
38	2000	300-500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
39	2000	300-500	600	d.c.	Bar Plate Mill	Geared	1927	American Rolling Mill Co.	Middletown, Ohio	W
40	2000	350-234	2200	60 cy.	10" Skelp (Rough.) Mill	Geared	1916	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
41	2300-1300	115.4-65	6600	25 cy.	10" Skelp Mill	Geared	1915	Jones & Laughlin Steel Corp.	Woodlawn, Pa.	GE
42	2500	146	6600	25 cy.	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
43	2500	184	6600	25 cy.	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
44	2500	184	6600	25 cy.	Skelp Mill	Rope	1908	National Tube Co.	Lorain, Ohio	W
45	2500	252	2200	60 cy.	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
46	2500	252	2200	60 cy.	Skelp Mill	Geared	1917	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
47	2500	295	6600	25 cy.	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
48	2600	320-275	600	d.c.	26" & 21" Cont. Skelp Mill	Direct	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
49	3000	65-130	600	d.c.	30" Rev. Bar Mill	Direct	1927	National Tube Co.	Lorain, Ohio	W
50	3000	65-130	650	d.c.	30" Rev. Bar Mill	Direct	1927	Jones & Laughlin Steel Co.	Woodlawn, Pa.	W
51	3000	184	6600	25 cy.	16" Cont. Skelp Mill	Coupled	1924	Gary Tube Co.	Gary, Ind.	AC
52	3000	354-212	2200	60 cy.	Skelp Mill	Geared	1920	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	W
53	3000-2250-1500	500-375-250	2200	25	24" Sheet Bar Mill	Geared	1926	Inland Steel Co.	Indiana Harbor, Ind.	GE
54	3600-1940	290-156	2200	60	21" Continuous Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE
55										
56	4000	80	650	d.c.	30" Universal Skelp Mill	Direct	1922	Youngstown Sheet & Tube Co.	Youngstown, Ohio	GE
57	4000	83.3	6600	25	26" x 21" Cont. Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
58	4500	120-255	750	d.c.	Univ. Skelp Mill	Coupled	1925	Gary Tube Co.	Gary, Ind.	AC
59	5000	100	2200	60	19" Cont. Sheet Bar Mill	Direct	1927	Continental Steel Corp.	Kokomo, Ind.	GE
60	5500	370	6600	25 cy.	16" Cont. Skelp Mill	Geared	1924	Gary Tube Co.	Gary, Ind.	AC
61	6500	187.5	6600	25	26" x 21" Cont. Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
62	6700-5000-3320	500-375-250	6600	25	26" x 21" Cont. Skelp Mill	Geared	1926	Bethlehem Steel Co.	Sparrows Point, Md.	GE
63	7500-4040	250-134	2200	60	21" Continuous Sheet Bar and Skelp Mill	Geared	1925	Youngstown Sheet & Tube Co.	Indiana Harbor, Ind.	GE

In the preceding review from pages 25 to 62, we have presented a motor list which has been prepared for your permanent files. In this list are included all the motors of 300 HP and over and show the HP, RPM, Voltage, Cycles, Type of Mill, Drive, Date of Purchase, Plant and its Location and the name of the Manufacturer.

This list was originally prepared and printed in January, 1925, and each year we have added the motors which have been sold up to the time of going to press. The list which is presented herewith includes all motors sold up to and including December, 31st, 1927. The first section of the list is made up numerically, that is 300 HP motors appear first, then 350 HP, and on up to 9000 HP. The second part of the list is classified according to the type of mill and includes Rail and Structural Mill Drives, Plate Mill Drives, Blooming Mill Drives, Sheet and Tin Plate Drives, Rod Mill Drives, Piercing Mill Drives. Tube Rolling Mill Drives, Strip and Hoop Mill Drives, Multi-Speed Drives, Merchant Mill Drives, Wire Mill Drives, Wheel Mill Drives, Aluminum, Brass, Copper and Non-Ferrous Mill Drives, Reversing Mill Drives, A. C. Speed Sets, D. C. Adjustable Speed Drives, Bar and Billet Mill Drives, Cold Roll Drives, Sheet Bar and Skelp Mill Drives.

We are requesting that you preserve this January issue, for it is our intention to print for the next three years only those motors which have been sold during the year.

Index of Proceedings of the A.I.&S.E.E. and Iron & Steel Engineer From 1907 to 1927

The following 20-year index of the activities of the AI&SEE has been compiled for the purpose of providing for the engineers of the Iron and Steel Industry a ready reference and guide of electrical, mechanical, combustion and safety practices for the past 21 years.

The index is catalogued as follows: 1st. Authors, which represents all of the leading engineers of the Iron and Steel Industry. 2nd. Subjects of Papers which cover practically all engineering in the Iron and Steel Industry.

A careful analysis of this index leads to the conclusion that the AI&SEE has performed a highly specialized engineering service of lasting and inestimable value to the Iron and Steel Industry.

List of Authors

A

Abbis, R. D., Recent Boiler Plant Installation at Edgar Thomson Works, Carnegie Steel Company. 1927—285.
Adams, L. F., Continuous Rated or 50 Degree Rise Motors. 1921—21.
Albrecht, G. M., and W. H. Powell, Direct Current Armature Windings for Multi-Polar Generators and Motors —Frogleg Windings. 1925—345.
Albrecht, J. H., The Thomas Flexible Coupling. 1923—205. Breaking Spindles for Main Roll Drive. 1924—634.
Allderdice, Taylor, Safety Engineering Division of A. I. & S. E. E. 1927—7.
Alsaker, Alfred, Outdoor Sub-Station Practice and Use of Carbon Tetrachloride Fuses. 1919—55.
Andresen, A. M., Portable Electric Tools as Applied to the Iron and Steel Industry. 1916—447.
Andrew, Kenneth, and Walter Fixter, Electric Locomotives for Industrial Purposes. 1919—283.
Angel, H. H., Magnetic Control for Steel Mill Auxiliaries. 1926—349.
Applegate, R. R., Pipe Line Arc Welding. 1925—125.
Arthurs, Addison E., Comparative Merit of Renewable Fuses. 1924—193.

B

Bailey, B. G., Electrically Heated Soaking Pits. 1925—111.
Bailey, E. G., Combustion Control. 1924—709. Automatic Combustion Control. 1925—293.
Baker, Ray L., and Joseph McKinley, Central Station Power Supply to Iron and Steel Industry. 1917—339.
Baldwin, Allen T., The Flaming Arc Lamp in the Iron and Steel Industry. 1914—491.
Barlow, Lester P., The Differential Pressure Steam Generating System. 1925—176.
Bauer, R. G., Report of Sub-committee on Illumination. 1922—662.
Batesole, D. E., Mounting and Maintenance of Roller Bearings on Electric Motors. 1924—155.
Batesole, D. E., Ball and Roller Bearing Applications. 1927—109.
Batterman, J. J., The Fox-Multax Lamp. 1910—61.
Baum, J. V., Stokers and Their Recent Developments. 1922—163.
Beardmore, A. E., New Sheet Bar and Skelp Mill at Indiana Harbor. 1927—342.
Behrend, B. A., Gas Engine Driven Generators. 1907 Paper 18.
Beitman, B. T., Electric Power Distribution in the Steel industry. 1922—793.
Bell, J. T. R., Selection, Installation and Operation of Anti-Friction Bearings. 1924—193.
Bennett, A. M., Arc Welding Systems. 1919—610.
Bennett, C. E., Lightning Arresters. 1920—579.
Blakeslee, D. W., Easy Method for Obtaining the Effective Motor Load from a Graphic Meter Chart. 1924. Steel Works Lighting. 1924. Electric Rolling Mills 1925—508. Merchant Mills. 1926—96. Tube Mills. 1926—147. Electric Rolling Mills. 1926—163. Lighting Costs. 1926—202. Ore Unloaders, Blast Furnaces and Skip Hoists. 1926—503.
Bowman, J. C., Underground Cables and Accessories. 1914—317.
Booth, J. J., and J. A. Morgan, Inspection and Operation of Electrical Apparatus. 1919—369.
Booze, M. C., A Discussion on Refractories for Use in Steel Plants. 1926—284.
Brackett, Q. A., The Theory and Practice of Lightning Protection. 1920—585.
Brading, C. M., and F. A. Wiley, Safety Movement in Steel Mills. 1919—255.
Bradley, Linde, Controllers and Motor Starters. 1909 Paper 6.
Brewer, O., General Phases of Pyrometry and Temperature Control in the Steel Industry. 1924—11.
Brolinson, B. G., The Ljungstrom Air Preheater. 1924—461.
Brownlie, David, Latest Practices in Hydraulic Valves. 1927—413.
Brunner, H. E., Application of Anti-Friction Bearings. 1924—179.
Buckwalter, T. V., Application of Taper Roller Bearings. 1924—133.
Buel, Jr., William C., The Chapman-Stein Recuperator. 1924—393. Discussion on Fuel Savings Conference. 1924.
Buhlmann, F. H., Factors Governing the Design of Roller Bearings for Roll Necks. 1927—302.
Buhlmann, F. H., Ball and Roller Bearing Applications. 1927—101.
Burd, F. J., and H. D. James, Electric Skip Hoists and Bell Hoists. 1917—17.
Burd, F. J., Report of Standardization Sub-committee on Control. 1920—561.
Burke, James F., Synchronous Motor Applications. 1925—159.
Burnham, George A., The Selection and Maintenance of Oil Circuit Breakers. 1925—384.
Burr, W. H., and H. A. Lewis, Automatic Door Hoists for Open Hearth Furnaces. 1918—209.
Burr, Walter, Ore Handling Costs. 1923—747.
Burr, W. H., Foreign Steel Mill Practice. 1925—318.
Burr, W. H., Electrical Developments in the Iron and Steel Industry. 1927—297.
Burr, Walter H., Progress in the Steel Industry. 1927—9.
Butler, R. E., Boiler Practices of 1922. 1922—561.
Butler, Ralph A., Heating of Ingots by Electricity. 1925—374.

C

Cair, Excello Arc Lamps. 1910—59.
Caldwell, Paul, Control of D. C. and A. C. Motors as Applied to Cranes. 1916—229.
Callan, J. C., Centrifugal Compressors. 1908 Paper 13.
Callow, O. C., Power Generation by Blast Furnace Plant. 1925—242.
Callow, O. C., Standardization of Control Diagrams. 1927—15.

Candy, A. M., Cutting Steel Mill Maintenance Costs with the Welding Arc. 1925—122.
Candy, A. M., and G. D. Fish, Tests of Arc Welded Structural Steel. 1926—380.
Canney, P. R., A System of Coal and Ore Bridge Traverse Control for Protection Against Wind and Skewage Hazards of Skew Type Direct Current Bridges. 1923—421.
Carrick, G. S., Combustion Control. 1925—294.
Cartwright, A. N., Safe Practices in Connection with the Operation of High Tension Power. 1927—257.
Chandler, Jr., W. P., Control of Pressure Gas Producers. 1924—289. Report of Electric Heat Committee for 1926—224.
Cheney, Edward J., and B. R. Shover, Cost and Efficiency of Alternating versus Direct Current Motors for Steel Mill Applications. 1911—90.
Cheney, E. J., Automatic Speed Regulating Equipment for Induction Motors with Flywheels. 1912—115.
Churchward, A., The Plastic Arc System of Welding. 1919—603.
Clark, A. B., The Economical Generation of Electrical Power. 1921—601.
Clewell, C. E., Modern Illumination in the Iron and Steel Industry. 1912—213.
Close, C. L., General Requirements for Safety by Committee of Safety, United States Steel Corp. 1927—463.
Clyde, Wm. G., Inspection Trip to Carnegie Steel Company. 1927—2.
Coey, Stewart C., Application of Auxiliary Apparatus in Iron and Steel Mills. 1914—183. The Relation of Physical Examination to Electrical Work. 1915—319.
Cole, Gurnsey H., Orientation of Steel Rod Mills. 1925—334.
Cone, C. F., Medium Temperature Furnace Installations 1924—747.
Conway, M. J., Additions to Rolling Mills at Steubenville Plant of the Wheeling Steel Corporation. 1926—239
Conway, Martin J., Recording Instruments in the Steel Industry. 1927—11.
Cooper, Nelson D., Direct Connected Hot Saws. 1927—202.
Refractory Problems, By-Product Coke Plant. 1926—292.
Cornwell, B. A., Practical Education of Steel Mill Electricians. 1920—255, Educational Training for Electrical Employees. 1919—378. Motor Operated Centrifugal Pumps in Steel Plants. 1923—309.
Corrin, J. G., Care and Operation of Power Transformers. 1922—23.
Cosdon, H., Standardization of Electrical Apparatus for Cranes and Machine Tools. 1917—663.
Cotton, Alfred, and E. R. Fish, Heine Boiler Practice in 1922. 1922—536.
Cramer, Frank W., and A. A. MacDonald, Reducing Power Bills on Mine Fans with Synchronous Motors. 1922—213. Some Factors Entering into the Selection of Motors for Mine Hoists. 1923—627.
Cramer, Frank W., General Specifications for Electric Overhead Traveling Cranes—Heavy Duty Steel Mill Service. 1921—403. Report of Control Committee. 1922—621. The Automatic Blast Furnace. 1925—229. Features of the New Electrical Installations at the Cambria Plant of the Bethlehem Steel Co. 1926—443. Electrical Hazards in the Steel Industry. 1926—463.
Cramer, Frank W., An Analysis of the Motor Bearing Problem. 1927—329.
Crane, J. B., The Trend of Boiler Development. 1922—557.
Crolius, F. J., Pulverized Firing in Steam Generation. 1921—161.
Cronk, H. C., Practical Operation of Motor-Driven Continuous Mills. 1918—35.
Crosby, F. B., The Electrical Engineer in the Steel Plant and Out. 1921—563.
Crow, T. D., Design and Application of Ball Bearings. 1924—233.
Crump, R. F., Steel Treating and its Value to the Steel Engineer. 1925—409.
Cummins, A. C., and A. R. Leavitt, Single Bucket Blast Furnace Skip Hoist Characteristics. 1923—453.
Cummins, A. C., Developments in Electrical Maintenance Shop Practice. 1924—579. The Standardized Commutating Pole Mill Type Motor. 1926—427.
Cummings, Robert A., Reinforced Concrete Poles. 1912—343.

D

Daniels, F. H., Stokers and Their Recent Developments. 1922—163.
Day, P. C., Herringbone Gears for Steel Mills. 1913—295. Flexible Couplings. 1923—204.
Dawson, T. C., Recovering Armature Shafts with Arc Welding. 1925—187.
Davenport, R. B., Dynamic Braking. 1912—401.
Davis, F. W., Some Applications for Oxygen to Ferrous Metallurgy. 1926—427.
Davis, R. W., Flexible Couplings. 1923—216. Adjustable Speed Motor Drives. 1923—645.
Davis, R. W., J. D. Wright and O. H. Needham, Electrically Driven Reversing Mills. 1924—513.
Dean, D. W., Motor Driven Bloom Shear Without Clutch. 1926—338.
De Boos, F. A., Stokers and Their Recent Developments. 1922—163.
Dickerman, Judson C., The Giant Power Survey of Pennsylvania. 1924—379.
Dickinson, E. D., The Mixed Pressure Steam Turbine with Special Reference to the Use of the Steam Regenerator. 1912—43.
Dobrin, H., Value of By-Product Gas to Industry. 1922—79.
Donovan, J. D., Electric Furnaces. 1917—671.
Donovan, J. D., A Superintendents and Foremans Responsibility in Safety and Rehabilitation. 1927—10.
Donovan, J. D., A Year's Operation of Power Plant at Betty Furnace, Central Alloy Steel Corp. 1927—500.
Dreyfus, Edwin O., Prime Movers for Central Stations; Their Economic Relation. 1911—138.
Dudley, R. W., The Static Condensers on Steel Mill Loads. 1925—246. Steam vs. Electric Driven Mills. 1920—73.
Dunn, Gano S., Mill Motors. 1907 Paper 7. Crocker-Wheeler Mill Motors. 1908 Paper 14. First Cost and Operating Expenses of Mixed vs. Exclusively Alternating Systems in Steel Mills. 1910—65.
Dunn, W. V., Alternating Current in By-Product Plants. 1921—249.
Dwight, H. B., Steel Conductors for Transmission Lines. 1916—205.

E

Eastwood, Arthur C., Automatic Motor Control. 1911—25.
Eastwood, Harry W., Machine Tool Control. 1914—585.
Egan, F. D., Underground Transmission in a Steel Plant. 1914—295. Modern Steel Mill Crane Specifications. 1916—745. Mechanical and Electrical Analysis of 40-inch Blooming Mill Screwdown. 1924—487.
Egan, Leonard W., The Complete Electrification of the Foundry Industry. 1923—377. Electrification and Simplification—Their Effect Upon The Foundry's Future. 1926—303.
Egan, F. D., Safe Practices in Connection with the Operation of High Tension Power. 1927—332.
Ehrhart, R. N., Condensers and Their Auxiliaries. 1914—543.
Else, H. D., Ball and Roller Bearing Applications. 1927—103.
Elliott, A. F., Electric Mining Equipment; Its Selection, Care and Operation. 1924—871.
Emmons, G. C., Coke Braize. 1925—276.
Eppelsheimer, D. E., Steam vs. Electric Driven Mills. 1920—50.
Erickson, F. E., Ball and Roller Bearing Applications. 1927—105.
Estep, F. L., Foreign Steel Mill Practice. 1925—319.
Escholz, O. H., Some Recent Investigations in Arc Welding. 1917—697.
Evans, N. J., Fuel Applications—The Essential Factors in Furnace Design. 1925—263.
Evans, W. A. D., The Mercury-Vapor Quartz Lamp. 1913—145.

F

Falter, P. H., The Generation of Steam by Electricity. 1923—231.
Farrington, James, By-Product Coke Ovens. 1917—227.
Farrington, James, and R. H. McLain, Grab Bucket Coal Hoists Operated by Alternating Current Motors with Dynamic Braking and Regenerative Braking. 1917—439.
Fast, Gustave, Flexible Couplings. 1923—188. Mill Type Coupling Designs. 1926—100.
Faulkner, J. A., Utilizing Waste Fire Bricks. 1926—218.

Feldmann, W. H., Power Factor Correction, Effective Power and Reactive Power. 1927—389.

Fennell, B. C., Steam vs. Electric Driven Mills. 1920—53.

Fernow, Jr., B. E., Design and Use of Lifting Magnets. 1913—101. Magnetic Brakes. 1914—611.

Finks, G. H., The Conversion of Alternating Current to Direct Current. 1924—1.

Fischer, Carl, R. E. Hall and George W. Smith, The Prevention of Scale Formation by Boiler Water Conditioning. 1924—353.

Fish, E. R., and Alfred Cotton, Heine Boiler Practice in 1922. 1922—572.

Fish, G. D., and A. M. Candy, Tests of Arc Welded Structural Steel. 1926—380.

Fisher, Frank E., Electric Industrial Locomotives. 1924—913.

Fixter, Walter, and Kenneth Andrew, Electric Locomotives for Industrial Purposes. 1919—283.

Flanagan, W. N., The Control of Boiler Operation. 1921—295. Bent Tube vs. Straight Tube Boilers. 1922—321.

Fleming, R., Structural Steel Poles and Towers. 1912—358.

Foell, A. L., The Flat Suspended Open Hearth Roof. 1927—241.

Fortune, F. R., Cooper-Hewitt Lamps for Industrial Lighting. 1907 Paper 10. The Light for Safety. 1911—155.

Fox, Gordon, Auxiliary Drives. 1919—123. Considerations Concerning Auxiliary Drives. 1920—343. Electric Heating of Finishing Rolls of Sheet and Tin Mills. 1923—253. Steam vs. Electric Driven Mills. 1920—70.

Fox, Gordon, Electric Power in the Iron and Steel Industry Generation or Purchased. 1927—9.

Frank, Carl George, Progress in the Iron and Steel Industry and the Electric Furnace. 1915—105.

Freret, A. L., Heating of Underground Cables. 1919—209. Underground Transmission. 1920—327. The Freret Safety Enclosed Knife Switch. 1924—444.

Friedlaender, E., Electric Cranes for Steel Mill Service. 1911—56. Questions on Motor Drive for Main Rolls. 1913—209. Motor-Generators vs. Rotary Converters. 1915—57.

Fries, J. E., 60 Cycles vs. 25 Cycles in Steel Mills. 1918—543. Influence of Gear Ratio on Speed of Operation, Motor Heating and Contactor Wearing Auxiliary Steel Mill Drives. 1919—671. Improvement in Rotors. 1924—61.

G

Gadsby, G. M., and E. C. Stone, Central Station Power Rates. 1919—223.

Gage, Gordon—Slip Regulators vs. Notchbacks. 1920—653.

Gainsborg, E. C., Application of Anti-Friction Bearings to Roll Necks of Steel Mills. 1927—127.

Gainsborg, E. C., Anti-Friction Bearings on Roll Necks of Rolling Mills. 1927—274.

Galbraith, L. F., Report of Educational Committee. 1921—509.

Gale, R. F., Organization-Departmental. 1922—805.

Gary, Elbert H., Starting a Steel Mill with the Wave of a Hand. 1927—5.

Garrett, Jr., W. W., Main Hoists for Open Hearth Ladle Cranes. 1919—271. Auxiliary Motor Control. 1925—89.

Garrett, W. W., Engineering Investigation and Operating Cost Reduction. 1927—12.

Gassman, H. M., Special Lighting for Steel Mills. 1911—160.

Gerhardt, R. B., Hydraulic vs. Electric Drive for Steel Mill Auxiliaries. 1919—85. Electrical Features of a Modern Steel Plant. 1920—77. Electrification of the Steel Plant Railroad. 1921—535. Some Considerations in the Electrification of the Steel Plant Railroad Yard. 1922—461. Electrical Development Committee Report for 1922. 1922—605. Records and Tests. 1919—389. Electrical Development Committee. Report 1921—497.

Ghosh, S., Electrification of Tata Iron Works as Jamshedpur, India. 1924—545.

Ghosh, S., Electrification of the Tata Iron Works at Jamshedpur, India. 1927—404.

Gilson, B. W., Apprenticeship System as Applied to Steel Mills. 1914—89.

Glew, John, Pulverized Coal Used as Fuel in Sheet Mills. 1924—553.

Green, B. W., Steel Plant Power Generation from Waste Heat and Coal. 1920—21.

Greenwood, Walter, Installation of Electrical Equipment to Comply with Requirements for Safety. 1915—299. Safeguarding Electrical Equipment. 1917—253. Automatic Engine Stops. 1918—325. Standardization of Electrical Equipment and Its Relation to Accident Hazard. 1920—297. Comments on Safety Committee Work. 1921—597. Standardization of Engine Stops. 1923—355. Standardization of Engine Stops. 1924. Crane Hoist Travel Limit Devices. 1924—701. Accident Prevention. 1925—184. Guarding Against the Invisible Hazards of Electrical Installations. 1926—336. Discussion of Electrification of Plant Railroads. 1926—384.

Greenwood, Walter, Installation and Operation of Air Compressor Plants for Avoidance of Explosions. 1927—229.

Gurney, F. W., Application of Anti-Friction Bearings. 1924—147.

H

Hall, David, The Advantages of Modern Types of Direct Current Machines. 1916—83.

Hall, R. E., Carl Fischer and George W. Smith, The Prevention of Scale Formation by Boiler Water Conditioning. 1924—353.

Hall, W. S. A. C. vs. D. C. Motors for Rolling Mill Table Drives. 1919—419. The Application of Electric Power in the Iron and Steel Industry. 1922—127.

Hall, J. H., The Automatic Control of Synchronous Motors. 1927—427.

Handy, A. E., Blast Furnace Skip and Bell Hoists. 1912—15.

Hanson, F. A., Electric Heating Applied to the Steel Industry. 1922—837.

Harper, W. J., Open Hearth Roof Construction. 1926—290.

Harrington, James, Stokers and Their Recent Developments. 1922—163.

Harrison, Ward, Some Features of Good Steel Mill Illumination. 1911—198. The Incandescent Lamp in the Steel Industry. 1912—168. Some Recent Advances in Industrial Lightning. 1917—635. Report of Standardization Sub-committee on Illumination. 1920—569.

Harrison, Ward, and H. H. Magdsick, A Progress Report on Illumination. 1913—241.

Harrison, Ward, Fifteen Years of Steel Mill Illumination—What Change. 1927—244.

Hays, J. W., The Relation of the Engineer to Fuel Conservation. 1922—395.

Heath, L. A., The Proper Selection of Carbon Brushes. 1921—51.

Heitman, A. C. Generators and Induction Motors. 1907 Paper 8.

Heller, L. W., Steam Turbine Operation. 1922—723.

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Vanderwaart, P. T., Power Factor Correction and its Relation to Plant Operation. 1921—213. Safety Switches. 1922—873. Systematizing the Work of an Electrical Engineering Division. 1923—553. Installation and Operation of Static Condensers. 1923—739.
Vincent, H. B., Power Transmission. 1919—135.
Voss, J. A., Good Order as an Essential for Safety. 1926—376.

W

Wachtler, U. B., Mounting and Maintenance of Roller Bearings in Electric Motors. 1924—207.
Walsh, W. W., Electrolysis and Modern Cable Construction. 1919—97.
Waldorf, Fred., Application of Tapered Roller Bearings on Roll Necks of Rolling Mills and Pinion Stands. 1927—265.
Wales, S. S., Indirect Effects of Steel Mill Electrification. 1927—7.
Wales, S. S., The Public Service Corporation from the Larger User's Standpoint. 1927—490.
Walz, G. J., Foot Control. 1923—46.
Warner, W. L., Electric Arc Welding in the Steel Industry. 1925—115.
Warren, Frank, Electric Welding Machines. 1912—140.
Waters, G. A., Power Transformer Construction for Steel Mills. 1914—391.
Watson, F. C., Electrification of the International Nickel Company's Works for Monel Metal. 1922—415. Electrically Heated Hot Top Ingots. 1926—83.
Watson, C. B., Arc Welded Structural Steel Buildings. 1927—151.
Watts, H. S., Fuel Gases and their Use in Iron and Steel Plants. 1922—97. Possibilities in Stage Heating and Steam Extraction in Steel Mill Power Plants. 1923—105.
Wehr, J., 10 Ton Overhead Travelling Crane. 1927—483.
Weischel, H., The Motor that Corrects Power Factor. 1924—43.
Wensley, R. F., Automatic Substations. 1924—1.

Whitting, M. A., Motor Control. 1910—42. New Development in Control Apparatus for Steel Mills. 1911—13. Control Characteristic of Direct Current and Induction Motors. 1913-37.

Wile, R. S., The Melting of Alloys in the Electric Furnace. 1915—393.

Wiley, Brent, Electrical Equipment in Rolling Mills. 1908 Paper 7. Recent Developments of Motors for Steel Mill Service. 1911—82. Present Status of Motor Drive for Main Rolls of Steel Mills. 1913—171. Factors Relating to the Economical Generation and Use of Electric Power in the Steel Industry. 1917—311.

Wiley, Brent, and Wilfred Sykes, The Electrification of Steel Mills and the Use of Central Station Power. 1915—177.

Wiley, F. A., and C. M. Brading, Safety Movement in Steel Mills. 1919—255. Safety Organization, General Safety Rules. 1922—673.

Wilson, J. C., Measuring Gas Electrically. 1918—115.

Wilson, G. P., Frequency Converter Speed Sets for the Carnegie Steel Co., Upper Union Works, Youngstown, Ohio. 1927—487.

Winder, C. A., Electric Heat Treatment. 1919—507.

Winne, H. A., The Application of Direct Current Motors to Main Roll Drives. 1927—194.

Winne, Harry A., The Application of Synchronous Motors in Steel Mills. 1927—250.

Winslow, G. H., Report on Operation of Stoeckel Induction Drive. 1908 Paper 1.

Winters, E. P., Direct Current in By-Product Plants. 1921—257.

Witting, A. G., Judging the Combustion of Gaseous Fuels from Gas Analysis. 1922—499.

Wohlgemuth, M. J., and E. K. Read, Selection and Maintenance of Oil Circuit Breakers. 1925—398.

Wood, A. R., Lightning Arrester Protection on 13,200 V. and 2,400 V. Distribution Lines. 1926—132.

Woodhull, F. H., The Regulating Storage Battery as Applied to Steel Works D.C. Generating Stations. 1911—130. Automatic Electrolytic — Oxy-Hydrogen Plant. 1919—217. Electric Cranes. 1923—41.

Worker, Joseph G., Fuel Economy by Co-operation in Establishing a Better Practice in the Operation of Stokers and Boilers. 1917—465. Extending the Heat Cycle in Boiler Rooms by the Use of Preheated Air for Combustion Purposes. 1925—391.

Wright, J. D., Speed Control of Induction Motors for Steel Mill Drive. 1916—693. Auxiliary Motors for Steel Mills. 1918—599. Electric Mill Drives. 1920—1. Control Equipments for Auxiliary Motors. 1921—615. Some Electrical Developments. 1924—58. Electrically Driven Reversing Mills. 1924—417.

Wright, J. D., R. W. Davis, and O. H. Needham, Electrically Driven Reversing Mills. 1924—513.

Y

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Young, H. W., New Graphic Record for Steel Mill Service. 1910—63.

List of Subjects

A

Acceleration of Direct Current Mill Auxiliary Motors.—Methods of—C. J. Smith. 1926—125.

Accident Hazard.—Standardization of Electrical Equipment and its Relation to—Committee. 1920—297.

Accident Prevention—Walter Greenwood. 1925—184.

Accounting.—Power—W. O. Oschmann. 1917—163.

Achievements in the Steel Industry During the Year 1923. G. E. Stoltz. 1924—55.

Addition to Rolling Mills at Steubenville Plant, Wheeling Steel Corp.—M. J. Conway. 1926—239. Discussion. 1926—389.

A.C. and D.C. Magnetic Control for Auxiliary Motors. W. O. Lumm. 1914—239.

Alternating Current to Direct Current.—The Conversion of—G. H. Finks. 1924—1.

Alternating Current in By-Product Plants. W. V. Duna. 1921—249.

A. I. & S. E. E.—Objects and Scope of the—W. T. Snyder. 1916—469.

Annealing Treatment and Forging of Steel.—Electric Furnace for—Wirt S. Scott. 1918—193.

Annealing and Heat Treating Furnaces.—Electric—George B. Mills. 1921—1.

Apparatus and Appliances.—Laters Developments—Committee. 1916—533.

Apparatus Built by the General Electric Co. for Mill Service. D. B. Rushmore. 1907 Paper 3.

Application of Auxiliary Apparatus in Iron and Steel Mills. Stewart C. Coey. 1914—183.

Applications—Electrical—in the Steel Mill Industry. G. E. Stoltz. 1917—135.

Application of the Principle of Surface Contact to Industrial Haulage. Charles L. Kinsloe. 1915—441.

Applications in Steel Mill Practice.—Some Electrical—D. M. Petty. 1915—233.

Apprenticeship Systems.—Committee. 1916—615.

Apprenticeship and Electrical Work in the Iron and Steel Industry. A. W. Soderberg. 1915—371.

Apprenticeship System as Applied to Steel Mills. B. W. Gilson. 1914—89.

Armature Windings—Direct Current—for Multi-Polar Generators and Motors—Frogleg Windings. W. H. Powell and G. M. Albrecht. 1925—345.

Armature Windings. Discussion. 1925—451.

Automatic Electric Stations for Steel Mills. Chester Lichtenberg. 1924—252*.

Automatic Substations.—R. F. Wensley. 1924—1*.

Automatic Telephones in the Steel Industry. Samuel Suckoff. 1915—419.

Auxiliaries.—Magnetic Control for Steel Mill—H. H. Angel. 1926—349.

Auxiliaries and Auxiliary Drives for Steam Electric Generating Stations. A. L. Penniman, Jr., and F. W. Quarels. 1925—377.

Auxiliary Apparatus in Iron and Steel Mills.—Application of—Stewart C. Coey. 1914—183.

Auxiliary Drives. Gordon Fox. 1919—123.

Auxiliaries, Selection of Drive for Power Plant—F. T. Leilach. 1927—218.

B

Babbitt and Babbitting. T. D. Lynch. 1920—161.

Batteries—The Application to Iron and Steel Mills. R. C. Hull. 1908 Paper 10.

Battery—The Regulating Storage—as Applied to Steel Works D.C. Generating Stations. F. H. Woodhuil. 1911—130.

Bearing—Ball—Applications and Maintenance. H. R. Reynolds. 1924—167.

Bearings.—Anti-Friction—Applications of—H. E. Brunner. 1924—179.

Bearings.—Anti-Friction—Application of—F. W. Gurney. 1924—147.

Bearings—Anti-Friction—Applications to Steel Mill Machinery. George R. Holmes. 1926—104.

Bearings.—Anti-Friction—Selection, Installation, and Operation of—J. T. R. Bell. 1924—193.

Bearings.—Anti-Friction vs. Sleeve.—J. S. Murray. 1924*.

Bearings—Anti-Friction—in the Steel Mill—A. M. MacCutcheon. 1921—429.

Bearings—Ball—Design and Application—T. D. Crow. 1924—233.

Bearings—Roller—Applied to Mill Motors. L. J. Hess. 1922—739.

Bearing—Roller—Mounting and Maintenance on Electric Motors.—D. E. Batesole. 1924—155.

Bearing—Roller—Mounting and Maintenance in Electric Motors. U. B. Wachtler. 1924—207.

Bearings.—Special—Committee. 1923—499.

Bearings.—Taper Roller—Application of—T. V. Buckwalter. 1924—133.

Bearing Applications, Ball and Roller—F. H. Buhlman, H. D. Else, F. E. Erickson, J. M. Kelly, D. E. Batesole, H. E. Reynolds. 1927—101, 103, 105, 107, 109 and 113.
Bearings to Roll Necks of Steel Mills, Application of Anti-Friction. E. C. Gainsborg. 1927—127.
Bearings on Roll Necks of Rolling Mills and Pinion Stands, Application of Tapered Roller—Fred Waldorf. 1927—265.
Bearings for Use in Rolling Mills—C. J. Klein. 1927—271.
Bearings on Roll Necks of Rolling Mills, Anti-Friction—E. C. Gainsborg. 1927—274.
Bearings for Roll Necks, Factors Governing the Design of Roller—F. H. Buhlman. 1927—302.
Bearing Problem, An Analysis of the Motor—F. W. Cramer. 1927—329.
Bessemer Process of Making Steel. John Sullivan. 1921—91.
Blast Furnace.—The Automatic—Frank W. Cramer. 1925—229.
Blast Furnace Gas and Air for Blowing A Gas Producer.—The Application of—G. R. McDermott. 1925—269.
Blast Furnace Plant.—Power Generation by—O. C. Callow. 1925—242.
Blast Furnace Skip and Bell Hoists. A. E. Handy. 1912—15.
Blast Furnaces.—Skip and Bell Hoists—David L. Lindquist. 1918—43.
Blooming Mill—Engine vs. Motor Drive for Reversing—C. H. Hunt. 1924—547.
Blooming Mill—Operating Characteristics of an Electric—E. S. Jefferies. 1916—309.
Blooming Mills—Electrical Reversing—Ralph D. Nye. 1917—531.
Boilers—Bent Tube vs. Straight Tube—Walter N. Flanagan. 1922—321.
Boiler Development—The Trend of—J. B. Crane. 1922—521.
Boilers—Fuel Economy by Co-operation in the Establishment of a Better Practice in the Operation of Stokers and—Joseph G. Worker. 1917—465.
Boilers—High Pressure Steam—D. S. Jacobus. 1923—753.
Boiler—The Modern Sectional Header—R. M. Rush. 1922—533.
Boiler Operation—The Control of—W. N. Flanagan. 1921—295.
Boiler Practices of 1922. R. E. Butler. 1922—525.
Boiler Practice in 1922—Heine—E. R. Fish and Alfred Cotton. 1922—536.
Boiler Rooms—Extending the Heat Cycle by the Use of Preheated Air for Combustion Purposes. Joseph G. Worker. 1925—391.
Boiler Rooms—Measurement of Input and Output. J. M. Spitzglass. 1924—317.
Boiler Troubles from the Operating Man's Standpoint. Carl J. Smith. 1923—343.
Boiler Water Conditioning—The Prevention of Scale Formation by—R. E. Hall, Carl Fischer and George W. Smith. 1924—353.
Boilers—Waste Heat—Applications to Open Hearth Furnaces. Thomas R. Tate. 1920—641.
Boiler Installations in Steel Works—Trend of Recent. W. B Skinkle. 1927—11.
Boiler Plant Installation at Edgar Thomson Works, Carnegie Steel Company, Recent—R. D. Abbiss. 1927—285.
Bricks—Fire—Utilizing Waste—J. A. Faulkner. 1926—218.
Brier Hill Sheet Mill—Inspection Trip. 1925—222.
Brier Hill Steel Plant. 1919—155.
Brakes—Magnetic—B. E. Fernow, Jr. 1914—611.
Braking—Dynamic—R. B. Davenport. 1912—401.
Braking—Dynamic and Regenerative—Alternating Current Motors—Grab Bucket Coal Hoists. James Farrington and R. H. McLain. 1917—439.
Braking—Dynamic vs. Mechanical—George W. Richardson. 1921—265.
Breaking Spindle for Main Roll Drives. J. H. Albrecht. 1924—634*.
Brushes—Manufacture, Selection and Use of Carbon—E. H. Martindale. 1917—399.
Brushes—The Proper Selection of Carbon—L. A. Heath. 1921—51.

C

Cables and Accessories—Underground—J. C. Bowman. 1914—317.
Cable Construction—Electrolysis and Modern—W. W. Walsh. 1919—97.
Cables—Heating of Underground—A. L. Feret. 1919—209.
Cables—Underground—Chas. R. Sturdevant. 1912—307.
Cables—Underground—Practical Installation of—Philip H. Torchio. 1923—269.
Cables, Ductless Electric Power—C. F. Hood. 1927—143.
Calumet and Crawford Ave. Stations of the Commonwealth Edison Co.—W. F. Sims. 1924—382*.
Cambria Plant of the Bethlehem Steel Co.—Features of the New Electrical Installations at the—F. W. Cramer. 1926—443.
Cambria Works, Bethlehem Steel Co.—Inspection Trip. 1926—423.
Cambria, Works—New Rolling Mills—R. H. Stevens. 1926—446.
Cambria Works—New Gautier Mills from a Safety Standpoint—John Northwood. 1926—495.
Carbon Brushes—The Selection and Operation of—W. P. Poynton. 1913—9.
Carbon Tetrachloride Fuses—Outdoor Sub-station Practice and Use of—Alfred Alsaker. 1919—55.
Central Station Power—Electrification of Steel Mills and the Use of—Brent Wiley and Wilfred Sykes. 1915—177.
Central Station Power Service in Steel Mills—Jos. McKinley. 1916—505.
Central Station Power for Steel Mills—Committee. 1916—21.
Central Station—The Public Service Corporation from the Larger User's Standpoint—S. S. Wales. 1927—490.
Chain Power Transmission—Silent—F. L. Morse. 1914—465.
Characteristics—Control—of Direct Current and Induction Motors—M. A. Whiting. 1913—37.
Circuit Breakers—Oil—The Selection and Maintenance of—George A. Burnham. 1925—384.
Circuit Breakers—Oil—Selection and Maintenance of—M. J. Wohlgemuth and E. K. Read. 1925—398.
Coal—Pulverized—Used as Fuel in Sheet Mills—John Glew. 1924—553*.
Coal—Steel Plant Power Generation from Waste Heat and—B. W. Green. 1920—21.
Coal—The Tempering of—Thomas A. Marsh. 1923—367.
Coke Braize—G. C. Emmons. 1925—276.
Coke Braize—Generation of Steam from—John Van Brunt. 1925—274.
Coke Ovens—By-Product—James Farrington. 1917—227.
Combustion Control. E. G. Bailey. 1924—709.
Combustion Control—G. S. Carrick. 1925—294.
Combustion Control—T. A. Peebles. 1925—291.
Combustion Control—Automatic—E. G. Bailey. 1925—293.
Combustion Control by Machinery—C. H. Smoot. 1925—286.
Combustion—Extending the Heat Cycle in Boiler Rooms by the Use of Preheated Air for—Joseph G. Worker. 1925—391.
Combustion Flame Electrode—George T. Southgate. 1923—87.
Combustion of Gaseous Fuels—Judging from Gas Analysis—A. G. Witting. 1922—497.
Combustion—Surface—and Its Application—W. M. Hepburn. 1923—537.
Commutation—Some Electrical Problems Practically Considered—B. G. Lamme. 1914—13.
Compressors—Centrifugal—J. C. Callan. 1908 Paper 13.
Compressor Plants for Avoidance of Explosions, Installation and Operation of Air—Walter Greenwood. 1927—229.
Compressors, Centrifugal—Batt L. Spain. 1927—363.
Condensers and Their Auxiliaries—R. N. Ehrhart. 1914—543.
Condensers and Condenser Engineering Practice—D. D. Pendleton. 1918—385.
Condenser—Leblanc—Yawger. 1909 Paper 11.
Condensers—Static—Installation and Operation of—P. T. Vanderwaart. 1923—739.
Condensers—Static—On Steel Mill Loads—R. W. Dudley. 1925—246.

Constitution and By-Laws A. I. & S. E. E. 1925—79.
Control—Committee. 1922—583.
Control—Automatic Motor—Arthur C. Eastwood. 1911—25.
Control Apparatus for Steel Mills—New Developments in—M. A. Whiting. 1911—13.
Control—Auxiliary—and Automatic Acceleration of Electric Motors—E. W. Yeardley. 1907 Paper 1.
Control—Auxiliary Motor—W. W. Garrett. 1925—89.
Control for Auxiliary Motors—A. C. and D. C. Magnetic—W. O. Lumm. 1914—239.
Control Characteristics—Magnetic—H. F. Stratton. 1914—211.
Control Characteristics of Direct Current and Induction Motors—M. A. Whiting. 1913—37.
Control of D. C. and A. C. Motors as Applied to Cranes—Paul Caldwell. 1916—229.
Control Diagrams, Standardization of—O. C. Callow. 1927—15.
Control Equipment for Auxiliary Motors—J. D. Wright. 1921—615.
Control—Foot—G. J. Walz. 1923—46.
Control of Industrial Electric Power—Protection and—Charles P. Steinmetz. 1915—15.
Control of Induction Motors for Rolling Mill Drive—Wilfred Sykes and G. E. Stoltz. 1914—357.
Control—Motor—M. A. Whitting. 1910—42.
Control of Motor Driven Auxiliary Apparatus in Steel Mills—H. D. James. 1908 Paper 6.
Control for Motors—Magnetic and Mechanical—C. T. Henderson. 1907 Paper 12.
Control of Mill Tables and Screw-Downs—W. C. Kennedy. 1920—223.
Control—Machine Tool—Harry W. Eastwood. 1914—585.
Control for Ore Bridges—Direct Current Hoist and Trolley—N. L. Mortensen. 1924—879.
Control of Pressure Gas Producers—W. P. Chandler, Jr. 1924—289.
Control for Protection Against Wind and Skewage Hazards of Skew Type Direct Current Bridges—A System of Coal and Ore Bridge Traverse—P. R. Canney. 1923—421.
Control of Reversing Rolling Mill Equipment—Automatic—E. S. Lammers, Jr. 1920—137.
Control—Recent Improvements in Industrial—H. D. James. 1919—447.
Control—Recent Developments in Automatic—F. P. Townsend. 1917—77.
Control Standardization—Committee. 1920—561.
Control—Speed—of Induction Motors for Steel Mill Drive J. D. Wright. 1916—693.
Control for Steel Mill Auxiliaries—Magnetic—H. H. Angel 1926—349.
Control—Temperature—and Pyrometry in the Steel Industry—O. Brewer. 1924—11.
Control, Inductive Time Limit—N. L. Mortensen. 1927—398.
Control for Industrial Furnaces, Combustion—F. J. Ryan. 1927—493.
Controller—Full Reverse A. C. 2-Speed Mill—E. G. Paterson. 1926—481.
Controllers—Combination Manual and Magnetic Switch—H. F. Stratton. 1908 Paper 9.
Controllers—Magnetic Switch—C. S. Pirtle. 1907 Paper 11.
Controllers for Ore Unloaders and Ore Bridges—N. L. Mortensen. 1923—1.
Controllers—Standardization Meeting. 1913—327.
Controllers—Standardized Mill Table—John S. Rowan. 1918—169.
Controllers and Starters—Lynde Bradley. 1909 Paper 6.
Conversion of Alternating Current to Direct Current—G. H. Finks. 1924—1.
Converters—Frequency—for Interchange of Power Between Steel Mills and Central Stations—Fred J. Schwarz. 1926—208.
Conveyor—The Magnetized Roller—Harry Hollis. 1924—248*.
Converters for Steel Mill Applications, Parallel Operation of Synchronous—W. B. Shirk. 1927—356.
Converters, Parallel Operation of D. C. Generators and of D. C. Generators with—Ernest Pragst. 1927—358.
Cost and Efficiency of Alternating vs. Direct Current Motors for Steel Mill Auxiliaries—B. R. Shover and Edward J. Cheney. 1911—90.
Cost and Operating Expenses of Mixed vs. Exclusively Alternating Systems in Steel Mills—Gano Dunn. 1910—65.
Costs—Ore Handling—Walter Burr. 1923—747.
Cost of Rolling Steel in Various Mills—Review of—G. E. Stoltz. 1921—105.
Cost vs. Upkeep of Direct Current Motors. A. M. MacCutcheon. 1916—371.
Cost Reduction, Engineering Investigation and Operating—W. W. Garrett. 1927—12.
Coupling Design—Mill Type—Gustave Fast. 1926—100.
Couplings—Flexible—R. W. Davis. 1923—216.
Couplings—Flexible—P. C. Day. 1923—204.
Couplings—Flexible—Gustave Fast. 1923—188.
Couplings—Flexible—L. H. Keim. 1923—225.
Couplings—Flexible—W. E. Trumpler. 1923—219.
Couplings—Flexible—for Steel Mills and Other Drives—John J. Serrell. 1923—177.
Coupling—The Mesta Flexible—W. Trinks. 1923—210.
Coupling—The Thomas Flexible—J. H. Albrecht. 1923—206.
Crane Hoist Travel Limit Devices—Walter Greenwood. 1924—701.
Crane—New Types of Soaking Pit Crane—Kendall. 1907 Paper 6.
Crane Operators Physical and Mental Requirements—Safe—Charles M. Swindler. 1926—403.
Crane Operators Record. 1909—21.
Crane Problems—Some Steel Mill—A. J. Standing. 1923—33.
Crane Standardization.—Committee. 1920—539.
Crane Specifications—Modern Steel Mill—F. D. Egan. 1916—745.
Crane Specifications—Standard—Committee. 1910—75.
Crane Track Wheels—W. T. Snyder. 1911—72.
Crane Wire Diagram—Electric—George W. Richardson. 1923—36.
Crane Operators Rules—American Bridge Co. 1911—5. National Tube Co. 1911—8. Youngstown Sheet & Tube Co. 1911—11. Wisconsin Steel Co. 1911—12. Carnegie Steel Co. 1911—7-13.
Crane, 10 Ton Overhead Traveling—J. Wehr. 1927—483.
Cranes—Bridge Motors for Overhead Traveling—R. H. McLain. 1918—347.
Cranes—Control of D. C. and A. C. Motors as Applied to—Paul Caldwell. 1916—229.
Cranes—Electric—F. H. Woodhull. 1923—41.
Cranes—Electric—for Steel Mill Service—E. Friedlander. 1911—56.
Cranes—Electric—Worm Gearing for—G. W. Richardson. 1925—227.
Cranes—General Specification—Heavy Duty Steel Mill Service—Committee. 1921—403.
Cranes—Lubrication and Lubricating of—T. E. Tynes. 1911—68.
Cranes and Machine Tools—Standardization of Electrical Apparatus for—H. Cosdon. 1917—663.
Cranes—Main Hoists for Open Hearth Ladle—W. W. Garrett, Jr. 1919—271.
Cranes—Overland Protection on—A. G. Place. 1919—545.
Cranes—Rules for Safe Operation of—Committee. 1918—273.
Cranes—Rules for the Safe Operation of Electric Overhead Traveling—A. I. & S. E. E. Recommendations. 1926—345.
Cranes for Steel Mills—Latest Developments of—E. H. Kendall. 1915—281.
Cranes, Some Modern Types of Steel Mill—W. D. Keller. 1927—506.
Cycles—60 vs. 20—in Steel Mills—J. E. Fries. 1918—543.

D

Design of Structures for Steel Works—Chares A. Randorf. 1916—427.
Design and Test of Susquehanna Station, Metropolitan Power Co.—J. A. Powell. 1926—167.
Decisions of the Public Service Commission of the Commonwealth of Penna. Relative to Rates of Electric Light and Power—F. Herbert Snow. 1924—387*.
Depreciation of Electrical Apparatus—Repair and—G. E. Stoltz. 1915—341.

Development of the American Iron and Steel Industry, The Economic and Social—T. W. Robinson. 1927—477.
Developments in New Apparatus and Appliances—Committee. 1916—533.
Developments—Progress in the Steel Industry—W. H. Burr. 1927—9.
Developments in the Iron and Steel Industry, Electrical—W. H. Burr. 1927—297.
Development Report—Electrical—Committee. 1922—567.
Direct Current in By-Product Plants. E. P. Winters. 1921—257.
Direct Current—The Conversion of Alternating Current to —G. H. Fink. 1924—1.
Direct Current Machines—The Advantages of Modern Types of—David Hall. 1916—83.
Direct Current Motors to Main Roll Drives, The Application of—H. A. Winne. 1927—194.
Discussion of Electrification Plant Railroads—Walter Greenwood. 1926—184.
Discussion on Steel Mill Yard Electrification—David C. Hershberger. 1926—378.
Distribution of Power in Industrial Plants—Transmission and—D. M. Petty. 1920—309.
Distribution in the Steel Industry—Electrical Power—B. T. Beitman. 1922—721.
Distribution Systems—Grounding the Neutral For—W. H. Price. 1919—305.
Distribution Systems—Underground—G. J. Newton. 1916 —171.
Distribution—Underground System of—Wm. D. Ligon. 1912—297.
Drilling and Reaming—Electric—F. W. Sterens. 1903 Paper 2.
Drive for Main Rolls—General Specifications for A.C. Motor—Committee. 1919—569.
Drive for Steel Mill Auxiliaries—Hydraulic vs. Electric—Discussion. 1919—703.
Drive in Steel Mills—Economics of Electric—Wilfred Sykes. 1914—597.
Drives — Considerations Concerning Auxiliaries — Gordon Fox. 1920—343.
Drives—Electric—for Reversing Mills—Selection of—L. A. Umansky. 1925—479.
Drives—Electrical—for Rolling Mills—H. C. Uhl. 1925—322.
Drives for Rolling Mills — Adjustable Speed — L. A. Umansky. 1924—817.
Drives for Main Rolls of Steel Mills—Variable Speed—K. A. Pauly. 1913—267.

E

Economies of Electric Drive in Steel Mills—Wilfred Sykes. 1914—597.
Education for Electrical Employees of Iron and Steel Mills —Methods of—Committee. 1918—303.
Education of Steel Mill Electricians to Increase Production—Practical—Committee. 1920—255.
Educational—Committee. 1919—327.
Educational Report—Committee. 1921—509.
Educational Work in the Iron and Steel Industry—Apprenticeship and—A. W. Soderberg. 1915—371.
Electric Driven Mills—Steam vs.—Joint Paper. 1920—35.
Electric Power in the Steel Industry—Factors Relating to the Economical Generation and Use—Brent Wiley. 1917—311.
Electric Power for Steel Mills—Chas. F. Scott. 1900 Paper 3.
Electric Heat—Committee. 1926—224.
Electrical Developments—Committee. 1920—381.
Electrical Engineers in the Steel Plant and Out—F. B. Crosby. 1921—563.
Electrical Development—Committee. 1921—497.
Electrical Equipment in Rolling Mills—Brent Wiley. 1908 Paper 7.
Electrical Features of a Modern Steel Plant—R. B. Gerhardt. 1920—77.
Electrical Installations—Brier Hill Sheet Mill.—E. F. Rhodes. 1925—224.
Electrical Rolling Mills, United States and Canada. 1926 —1.
Electrical Installations, New Structural Mills, Homestead Steel Works, Carnegie Steel Co., Munhall, Pa.—C. A. Menk. 1927—208.
Electrical Installation at Alliquippa Plant of the Jones & Laughlin Steel Corp.—R. M. Hussey. 1927—448.
Electrically Driven Reversing Mills.—Wilfred Sykes. 1914 —667.
Electrically Heated Soaking Pits.—B. G. Bailey. 1925—111.
Electricity in the Iron and Steel Industry.—John C. Reed. 1925—435.
Electrification of the International Nickel Company's Works for Monel Metal.—F. C. Watson. 1922—415.
Electrification of Steel Mills and the Use of Central Station Power.—Brent Wiley and Wilfred Sykes. 1915 —177.
Electrification of Plant Railroads—Discussion of—Walter Greenwood. 1926—384.
Electrification—Discussion on Steel Mill Yard—David C. Hershberger. 1926—378.
Electrification—A Review of Steel Mill—B. G. Lamme and W. Sykes. 1922—545.
Electrification and Simplification—Their Effect Upon the Foundry's Future.—L. W. Egan. 1926—303.
Electrification of Sheet Mills—J. S. Murray. 1927—173.
Electrification, Indirect Effects of Steel Mill—S. S. Wales. 1927—229.
Electrification of the Tata Iron Works at Jamshedpur, India S. Ghosh. 1927—404.
Electrode—The Combustion Flame.—George T. Southgate. 1923—87.
Electrolysis and Modern Cable Construction.—W. W. Walsh. 1919—97.
Engine vs. Motor Drive for Reversing Blooming Mill.—C. H. Hunt. 1924—547.
Engine Stops—A. I. & S. E. E. General Specifications. 1924—135*.
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Items of Interest

The Rowan Controller Co., Baltimore, Md., has just issued a number of very attractive pamphlets describing Oil Immersed AC. Starting Switches for Squirrel Cage Motors, across the line type.

The across-the-line starting switch is used for automatically starting squirrel cage motors up to 150 H.P. 220 volts and 250 H.P. 440 or 550 volts. It may also be used to control the primary circuit in starting slip ring motors when the primary current does not exceed 500 amperes.

This starting switch was designed to meet the requirements of those plants having severe operating conditions such as steel mills, cement mills, chemical plants, oil refineries and other industrial plants that appreciate the value of a starter having unusual reserve capacity.

Announcement of the creation of a motor division of its industrial department has been made by the General Electric Company through E. O. Shreve, manager of the department involved. The new division will have general supervision of all policies, prices, etc., concerning all motors handled by the General Electric Industrial Department.

F. M. Kimball has been appointed advisory manager, and J. E. N. Hume, manager, of the division in question, both appointments being effective January 1, 1928. K. H. Runkle has been appointed manager of mining and steel mill sales succeeding Mr. Hume, also effective January 1.

The Stackpole Carbon Company of St. Marys, Pa., has recently written a booklet which is the finest compilation of carbon brush data and information pertaining to the manufacture and use of carbon products that has ever been published. It contains a wealth of information relating to the troubles encountered on every known type of electrical machine on which brushes are used and includes the best known remedies for each trouble. A story, in picture form, telling how carbon products are manufactured, makes the booklet especially interesting. No electrician or electrical superintendent can afford to be without it. Write to the Stackpole Carbon Company for a copy of their No. 9 catalog today.

Harnischfeger Corporation, factory and home office at Milwaukee, Wisconsin, has recently established a branch office at Cleveland, Ohio. The address of the new office is 340 Rockefeller Bldg., telephone Superior 2584. Mr. J. T. Conners, District Manager, is in charge of the office. Mr. Connors is widely known in the Cleveland territory particularly among Construction Contractors. The complete line of P&H Gasoline Driven Shovels, Draglines, Clamshell Cranes, and Trenching Machinery will be handled through the Cleveland Office.

The January issue of the monthly magazine issued by the Delta-Star Electric Company, Chicago, contains an interesting article on the steam-room process employed in cementing insulators. Copies of the magazine will be sent upon request.

A new single-operator welder rated 300 amperes, one hour, 50 degrees C temperature rise is announced by the General Electric Company as the latest addition to its standard line of welding equipment. This machine includes a four-bearing, ball-bearing, motor-generator set with flexible coupling.

With this equipment the manufacturers claim a rapid and simple interchange of motors may be made by the user. As a result inspection, maintenance, renewals and changes caused by changes in the supply circuit would be simplified.

The generator is rated 300 amperes, one hour, 50 degrees C., and the driving motor is a 15-horsepower, 40 degrees C., continuous-rated unit. This conforms with the recent ruling of the National Electric Manufacturers' Association. The generator is so designed that field control is unnecessary and is eliminated. The generator panel includes an ammeter and a voltmeter, but not the customary field rheostat. The meters used have a metal front except for the glass over the scale, thus minimizing the possibility of breakage.

The motor starters for 60, 50 and 25-cycle motors are of the enclosed magnetic type, while those for the 25-cycle motors are enclosed resistor starters. The direct-current motors use a simple resistance starter with a line switch. Starting current is maintained in each case well within N.E.L.A. requirements.

The generator is designed to permit belt, motor, or engine drive, and will be designed for either stationary or portable use. It can be used as both a manufacturing and a repair tool, for service in foundries, steel mills, locomotive and car shops, ship yards, marine repair yards, tank shops, general machine shops, pulp and paper mills and in any other field where iron or steel is used. It bears the General Electric designation WD-300-A.

The Martindale Electric Company, 1256 West Fourth Street, Cleveland, Ohio, have taken over the exclusive sale and distribution of all industrial types of the Hullhorst motor-driven Undercutters and Slotters manufactured by The Hullhorst Micro Tool Company of Toledo, Ohio.

Martindale's No. 9 exclusive Undercutter catalog, containing twenty-four pages, is now available. Of the eleven types of Undercutters and Slotters six will cut either V-Shaped or U-Shaped slots.

Another announcement, which will be of interest to you, is that regarding the new right angle Hand Piece which we have developed for use with the Martindale Slot Cleaning Outfit which makes it possible to use the Slot Cleaner on Stators of A.C. Motors as well as on Armatures of D.C. Motors.

The right-angle handpiece can be used for both stators and armatures, although the straight hand piece is a little more convenient for the armatures. Therefore, if a man has a great deal of both stator and armature work, it will be best for him to order the outfit with both the straight and right-angle handpieces, but if he does not have very much armature work he can get along with the right-angle handpiece.

At a meeting of the Board of Directors of the Westinghouse Electric and Manufacturing Company, held recently, James Charles Bennett, Comptroller and Secretary of that Company, was elected a Vice President. In his new position he will have general charge of the Accounting and Treasury Departments.

In length of service Mr. Bennett is one of the oldest employees in the Westinghouse Electric Group, he having been employed by the Westinghouse Electric Company in 1886, five months after that Company was formed.

His first position was Assistant to the Auditor—and he was for some time the only assistant the Auditor had.

In 1898, after working continuously in the Accounting and Treasury Departments, he was elected Auditor. Subsequently he made several trips to Europe to inaugurate and supervise the accounting systems of the foreign Westinghouse Companies.

In 1909 the office of Comptroller was created and in this position Mr. Bennett was placed in charge of the accounting systems of the parent and subsidiary companies.

In 1911 his headquarters were transferred to New York City, at which time he was also made Secretary of the Company.

Mr. Bennett is a director of the Westinghouse Electric & Manufacturing Company, and also an officer and director of a number of its subsidiary companies.

A new type of low voltage terminal for indoor or station service has been recently placed on the market by the Standard Underground Cable Co., Pittsburgh, Pa. They are designed for mounting on the end of pipe conduit or connected to the sheath of a lead covered cable by means of stuffing box gland or plumbers wiped joint. They are made of cast iron with bakelite insulating tops and conductor outlets, the joints being rendered moisture-proof by liberal gaskets.

These terminals are suitable for terminating low-voltage power or control cables or similar low-potential conductors.

Sales of incandescent lamps in the United States during 1927 total approximately 320,000,000 large size and 218,000,000 small lamps, according to a review of the electrical industry for the year by John Liston of the General Electric Company. This is an increase of about 8,000,000 or 2½ per cent in the large sizes over 1926 and 16,000,000 or 8 per cent in the small sizes over the previous year.

"Sales the past year were the largest in the industry," says Mr. Liston; "In ten years the sale of large lamps has doubled and that of the small lamps has tripled. The year has also seen a noticeable increase in the sales of 10,000 watt lamps, the largest in commercial production, which were developed for motion picture studio use. These big lamps are now being widely used for aviation field lighting.

Mr. John A. Bennan, who is well known in the electrical industries through his development of the Jefferson Electric Manufacturing Co., of Chicago from a very small beginning to the largest plant manufacturing small transformers—has been elected president and general manager of the Chicago Fuse Mfg. Co. He has replaced Mr. W. W. Merrill who has retired after a 30-year period of guiding the destinies of this company.

Mr. Bennan is particularly well fitted for his new work, both from a business and production standpoint, and it is his urgent desire to preserve the reputation of the Chicago Fuse Mfg. Co., and its products—Union & Gem Fuses, Gem Switch and Outlet Boxes, Powerlets. Active steps are being taken to inaugurate production betterments with a view to still better serve the electric trade and industrial field using these products and meet the present day demands for better and quicker service.

Mr. Bennan retains his connection with Jefferson Electric Manufacturing Co., in the capacity of president.

George R. McDermott, Assistant Chief Engineer of the Illinois Steel Company, has accepted the position as Vice President and General Manager of The Chapman-Stein Company, thus relieving Mr. N. L. Daney, formerly General Manager, who has found it necessary to devote more of his time to The C. & G. Cooper Company, of which he is a Director and Treasurer. Mr. Daney will continue as Secretary and Treasurer of The Chapman-Stein Company and hopes to maintain a contact with his many friends in the steel industry.

Mr. McDermott has had a thorough engineering training and a wide experience in the steel industry.

G. R. McDERMOTT

He was graduated from Cornell University in Mechanical Engineering in 1905, then served an apprenticeship with the General Electric Company, specializing on steam turbines. He afterwards returned to Cornell University for advanced work, during which time he instructed in Thermodynamics in the College of Engineering.

Later he became associated with Westinghouse Church Kerr & Company, now the Dwight P. Robinson Company, of New York City, as a Field Engineer. He has been employed since 1913 by the Illinois Steel Company, South Works, where he has held the position of Steam Engineer and of late years Assistant Chief Engineer.

Mr. McDermott has been active in a number of the technical societies, notably the Association of Iron and Steel Electrical Engineers, combustion division, and the American Society of Mechanical Engineers. He has contributed many technical papers on various phases of the steel industry. Probably his greatest contribution was his paper entitled "Thermal Efficiency and Heat Balance of an Open Hearth Furnace," which was presented jointly by Mr. McDermott and Mr. C. L. Kinney, Jr., before the American Iron and Steel Institute and was awarded the Sir Robert Hadfield Prize, which is given by the American Institute of Mining and Metallurgical Engineers.

The company which Mr. McDermott is joining has been unusually successful and has built some of the largest and most efficient furnaces in America. It now has an organization of over fifty men and women, most of them experienced furnace engineers. The company is closely allied with The C. & G. Cooper Company, a successful machinery building firm now in its ninety-fifth year.

In his new position, Mr. McDermott believes he will have a broader field, and consequently greater opportunities, to use his engineering training and particularly his experience with combustion problems, all of which will now be available as a service to the entire industry.

M. H. Detrick Company, Chicago, Ill., are distributing their new 64-page furnace book, which has just come off the press.

The purpose of this book is to show a simple and modern solution to every problem having to do with furnace roof and walls. The Detrick Design is explained and the application of Detrick Arches and Walls to every type of furnace burning every class of fuel is shown.

Those responsible either for the construction or the operation of boiler and industrial furnaces are continually confronted with a variety of problems affecting the roof and walls. Construction costs, maintenance, repairs and replacement are items which may be made to vary between wide limits, and intelligent analysis is essential if the factors of greatest economy and efficiency for any given furnace are to be discovered.

Peculiar and irregular roof contours, special provisions for ventilation, openings for feed chutes, air and steam nozzles, and a great variety of special needs complicate the matter of furnace lining.

The combustion engineer may find among the wide range of furnaces illustrated in this book settings very similar to his own, which it is hoped will be of assistance to him in meeting the advancing demands of modern furnace construction and operation.

Write M. H. Detrick Co., 140 S. Dearborn St., Chicago, Ill., for your copy.

Wm. B. Scaife & Sons Co. have recently received an order from the Carnegie Steel Co. for a water softening system for the Duquesne Works at Duquesne, Pennsylvania.

The softened water will be used for boiler feed and a total of 8,000,000 gallons per day will be the ultimate capacity; this amount of water will make it the largest complete water softening and filtration system ever installed for the treatment of boiler feed water.

The system will be of the Intermittent Type wherein the water will be treated and allowed time

for reaction and sedimentation in four 540,000 gallons tanks. Each tank will be equipped with mechanical stirring devices for thoroughly mixing the reagents with the raw water to be softened; the tanks will also be equipped with indicating and recording gauges for recording the complete cycle of operation of each tank. After the water is softened it will pass through eight concrete filters, each of a capacity of 1,000,000 gallons per day.

The reaction-settling tanks will be equipped with electrically operated valves and the filters will be equipped with oil-pressure-operated valves of the hydraulic type. All filters will be equipped with indicating and recording loss of head gauges and indicating and recording rate of flow controllers.

The water from the filters will be discharged into a clear well, located under the pipe gallery and from which it will be delivered by special pumping equipment to an 800,000 gallon filtered water storage tank. The pumping equipment will be a novel arrangement in that it will be entirely automatically controlled so that the filtered water will be discharged to the filtered water storage tank or to the heaters as may be required without manipulation of valves.

An interesting feature of this system will be the fact that all valves are operated by remote control. An operator stationed at the control boards will manipulate all tank and filter valves without having to inspect them personally to see that they have properly opened or closed. This feature will permit operation with fewer men than would otherwise be necessary and when completed, the system will represent the most modern practice in the construction of water softening equipment.

Manufacturers of seamless and lap weld tubing will be interested in a new reducing mill which has many unique features, which appeal to the producers of tubing. In the manufacture of tubing it has been rather difficult and expensive to make the smaller sizes, i. e. sizes smaller than 2½" O.D. In the ordinary methods of manufacturing seamless tubes it is usual to pierce and roll the blanks at approximately 3" O. D. and then reduce the diameter in a continuous duo roll mill. In this mill each successive roll stand has its axis at 90° to the preceding stand, in order to eliminate the rib formed at the meeting of the rolls and also to reverse the pressure on the tube. This type of mill has served well but has many disadvantages. The new design has incorporated the following features that are worthy of notice.

It has three rolls in the same plane in each housing. Each roll encloses 120° of the circumference of the tube. The rolls are mounted on roller bearings, which, together with the gearing, are completely enclosed and run in oil.

The roll stands are all practically alike except that the roll assembly is shifted 180° in each succeeding stand. The drive shaft always comes out in a horizontal line on the same side of the mill, and these shafts are driven through speed reducers by variable speed motors, each stand having its individual motor. This permits exact regulation of speed and permits handling various gauges and materials at the correct speeds. Higher reductions per pass, less maintenance and higher quality of product are obtained. These unusual features are covered by pending Patent Applications.

Machinery for the production of hot rolled seamless tubes up to 16" in diameter and as small as 1" in diameter, both by the pilger method and the American or automatic rolling method, have been designed embodying the latest and most modern practice of both European and American mills.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, are now prepared to furnish a complete line of tube mill machinery including these new type Reducing Mills described above.

Mr. E. A. Ellis, Director of Welfare of the Wheeling Steel Corporation at Wheeling, W. Va., announces that their 18 plants with a total of 11,532 full-time employes went through the month of October with the lowest number of lost time accidents in the history of their corporation—39. They did not have a single permanent partial disability injury during this same period and they naturally feel very proud of the accomplishment of this worth-while record.

Youngstown Sheet and Tube Company steel plant, for the month of October shows but one lost time accident and that of only five days duration. Another fine achievement.

The following description of a closed circuit safety signal system has been prepared by Mr. C. Giegerich, Safety Engineer, Llewellyn Iron Works, Los Angeles, Calif., and worthy of careful reading:

"Where erection hoists are used in building construction, it is the practice to transmit stop and start signals from the erecting man to the hoist man by means of standard electric bells and push buttons, the push button station being wired with a portable electric cord so that it can be carried from one spot to another.

"Recently one of the wires in this cord broke while a load was being hoisted. When the erecting man tried to signal a stop, the bell refused to respond and a serious accident was averted only by the tearing of the hoisting sling.

"In order to eliminate the hazard caused by the breaking of the bell wires, a closed circuit signal system has been installed so that, in case a wire breaks, the bell will immediately ring automatically, and thus record the breakage. This system furthermore gives the alarm in case of failure of electric power. The bell also rings if one of the push button wires becomes grounded.

"The signal system is linked to the power system by means of a small step-down transformer which supplies low voltage current to a relay through the contacts of a signal button which has normally closed contacts instead of the usual normally open contacts. The relay contacts are arranged so that, as long as the relay coil is energized, the relay contacts are open. When the push button is pressed, or if the power fails, the relay contacts complete a connection to an ordinary bell and battery so that the bell will ring until the power is restored, or the push button is released."

The Combustion Engineering Corporation announces briefly the following outlines the recent

changes made in the design of the C-E plate type Air Preheater:

Clean Out Doors—Access doors are provided in the heater casing which permit blowing the entire surface of the gas passages with steam or air lances. Wherever possible, two such doors are provided in each heater located approximately one quarter of the element length from each end of the element so that the entire heating surface can be blown. Opposite these doors the spacer bars in the gas passages are cut away to form a lane through which a lance can be inserted. These doors can be readily opened and are small enough so that the heaters can be cleaned while the unit is in operation.

Welded Assembly Construction — In order to eliminate any leakage from the air side to the gas side of the preheater, the elements are welded to the casing by means of a sealing strip which also holds the elements in place and permits expansion of the elements relative to the casing. This construction also greatly reduces the amount of erection work necessary as there are no bolted joints to be lined up.

Arrangement of Gas and Air Openings—Although a number of arrangements are possible with respect to air flow through the heater, it has been found that what is known as the "S" flow design results in the most effective transfer of heat from gas to air. In this design, the air inlet and air outlet are located on opposite sides of the heater, and the baffles are so arranged that all lanes of air travel are of approximately uniform length, which assures an even distribution of air in all parts of the heater. The advantages of this construction, which derives its name from the fact that the air lanes are of "S" shape, warrant its use wherever possible.

The use of electricity in underground mining at higher voltages than 200 a.c. and 250 d.c. should in general be discouraged, particularly for circuits as installed in mines in the United States without earthing or grounding, states K. L. Marshall, associate mining engineer, United States Bureau of Mines, Department of Commerce, in Information Circular 6052, recently published. Other things being equal, the hazard to life through electric shock decreases as the operating voltage is decreased. There are on record a number of fatalities from electric shock due to contact with circuits of 440-volt alternating current and 500 and 600-volt direct current, but the Bureau of Mines knows of comparatively few fatalities from electric shock in underground mines where voltages of 220-volt a.c. current and 250-volt d.c. were in use.

Portable equipment, such as electric mining machines, electric drills, electric loading devices, electrically driven conveyors, and electric fans or blowers, when equipped with open motors, should not be used in a gassy mine, states the Bureau of Mines, in Information Circular 6052. If they are used in a gassy mine, they must receive careful consideration if the mine or the miners are to be even fairly adequately safeguarded. Its portability makes the use of such equipment difficult of safe supervision, and the foreman or other responsible official may not always know just how or where it is being used. All such equipment should have the protection of frequent examination for gas in the places in which it is used and preferably this examination should be made by a competent certified official. Where gas is found, only properly maintained and inspected "permissible" equipment should be used, and then only with the same gas examination as for open-type equipment. The permissible motors and accessories should be expected only to protect against an unexpected or undetected occurrence of gas.

Baxter A. Cornwell, an Active Member of this Association, Electrical Engineer at the Carnegie Steel Co., Youngstown, Ohio, died suddenly of heart trouble, December 19, 1927.

"Billy" Cornwell, as he was known to his vast number of friends, was born in Anacostia, British Columbia, in 1881. He attended the Public Schools at that place, and later took up Engineering, entered Lehigh University at Bethlehem, and graduated with the degree of Electrical Engineer.

He has been identified with the Ohio Works of the Carnegie Steel Company, at Youngstown, Ohio,

B. A. CORNWELL

in the capacity of Electrical Engineer, and was instrumental in the developments of a large number of ingenious devices in Electrical Rolling Mill practices.

As an Active member of the Association of Iron & Steel Electrical Engineers, his contributions to this society have been many and very valuable. His treatise in 1920, covering the practice of steel mill electricians, was well received by the Electrical Engineers of the Iron & Steel industry, and used by many of the industries in America. His contribution, Educational Training of Electrical Employees, is also being used throughout the industry. In 1923, he presented a paper, in connection with centrifugal pumps, in which he compared the turbine driven centrifugal pump with the induction motor and synchronous driven pump. This was the first paper of its type presented before the A. I. & S. E. E., and is now being used as a reference by the Iron and Steel Industry.

Mr. Cornwell was a prominent member of the Recovery Lodge No. 31, A. F. & M., the Ohio So-

ciety of Vocational Education, the Trumbull Country Club, and the Presbyterian Church at Pittsburgh, Pa.

Fifty-seven banks of Steere Cooling Coils have been purchased by the Youngstown Sheet and Tube Company from the Semet-Solvay Engineering Corporation. They will be installed in the company's coke oven plant at South Chicago. The coils will be 40 tubes high and 20 feet long. They will handle the liquor produced from a carbonization schedule of 2,000 tons of coal every 24 hours. The coils will be sherardized to withstand corrosion. They will be of standard Steere welded construction. Distributing troughs will be equipped with leveling screws to permit adjustment and assure even water distribution.

International General Electric Company has placed an order for 725 Thompson Lamp Hangers to be shipped to the Minister of Railways in New Zealand, following several smaller orders for shipment to Australia, India and South America.

Strip steel coils, before they leave the coiling machines at the Superior Steel Corporation's plant, Carnegie, Pa., are bound with a single band around the middle of the circumference and another across the center to hold the inside end of the strip. This is sufficient binding as the coils are immediately piled on small trucks, and in lots of twelve, they are carried to the Annealing Department; there they are transferred to buggies, the binding is removed and the buggies are pushed into annealing furnaces.

All of the coils, regardless of their weight, the thickness or width of the metal, are twenty-eight inches across the outer diameter. Because of this, the center hole will vary between ten and twenty inches in diameter. The coils run from 1200 to 1800 pounds in weight while the strip varies in width from fourteen to twenty inches. Every coil is bound in the same manner.

In the Annealing Department, two EC&M Number 2-F Lifting Magnets on a special spreader beam handle these strip steel coils. Either one of these magnets will lift the heaviest coil if that coil is bound securely, but with the present simplified method of binding, the center turns of the coils will pull out under the pulling power of a single magnet. It was, therefor, a simple problem in economics, two magnets versus more elaborate binding of every coil, the solution of which dictated the purchase of the two magnets.

As stated before, the outer diameter of every coil is twenty-eight inches. The spreader beam designed for this job, holds the two lifting magnets so that their centers are exactly that distance apart, thus bringing the center of pull of each magnet above the outer edge of the coil to be lifted. The major part of the lifting of a coil is done at the outer edges so there is no tendency for the steel strip to come uncoiled. With two lifting magnets, the Superior Steel Corporation has done away with elaborate, expensive binding of coils on a job where, under any circumstances, the binding can only be temporary.

The Cutler-Hammer Mfg. Co., Milwaukee, Wis., has just completed the largest motor operated field rheostat ever built by this company. The rheostats were designed for one of the large public utility companies in the South and are used with generators developing from 22,500 KVA to 27,500 KVA.

The rheostats are 60" wide, 80" high and 77" deep. This height does not include the motor drive which is 18" higher than the top of the frame. Each panel has 188 segments with 180 steps of resistance. The segments are divided into four sections which are staggered in relation to each other so that 175 current changes are obtained. Each rheostat has a maximum capacity of 1250 amperes.

The rheostats are built in two sections for ease in shipment. The two sections are bolted together and form a single rheostat when they are installed.

Each section consists of a panel mounted on a frame with the resistors. The levers on the two panels are driven from a shaft by sprockets and chains. The shaft is located on the top of the frame and is driven by a motor through reduction gears. The driving motor is controlled by push buttons placed at convenient locations. All levers are interlocked to prevent over-travel. Provision is made for operating the rheostats manually when necessary.

Two thousand, five hunderd and fourteen men, 244 days, 4,797,602 hours, No Lost Time Accidents, over eight months of perfect record attained at Joliet Works.

The successful continuance of Joliet Works' greatest Accident Prevention Record which has been announced in the preceding issues of "The Mixer" until, as we go to press on the 12th, the total has grown to the above outstanding figures, permits an announcement of such great import that gratifies beyond anticipation the privilege of being a part of such a worthy accomplishment.

In announcing the attaining of this record of 244 days—over eight months' time for the entire plant without a lost time case, we again repeat the statement which has been our pleasure and privilege to make on many previous occasions—that this contribution to this wonderful humanitarian cause is in all probability the greatest ever attained.

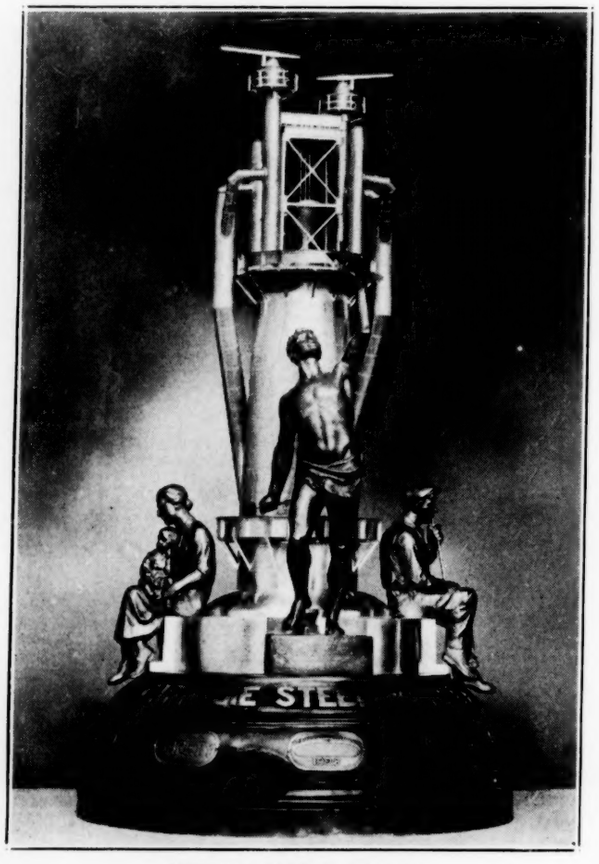
The progress which has been made from year to year commencing with the birth of Industrial Accident Prevention at Joliet Works has been outstanding, and the fact that progress has been made from year to year through all of the many tribulations and struggles adds to the significance of this accomplishment. In addition to the marks of advancement from year to year, our most outstanding attainments have come during the past four years and our record for this year with nine of the calendar months without a lost time case and with but three for the first eleven months is truly indicative of the fine spirit which prevails and so long as that co-operation continues we will show progress in our campaign irrespective of the fact that our percentage rate and the actual number of accidents is so low that it leaves almost nothing to work on in an effort to show a reduction.

We again repeat, with great pride, our expression of appreciation to every Superintendent, every Foreman, every Safety Committeeman and every Workman on the plant for their assistance and interest in making such a marvelous record and by the same token we sincerely solicit their continued help.—The Mixer, December Issue, 1927.

Carnegie Steel Co., Safety Trophy for 1928

In displaying this Safety Trophy for 1928 the Carnegie Steel Company of Pittsburgh gives expression to the hope that the spirit of competition in safety work in industrial plants may be found by others an inspiration to new efforts in the reduction of accidents, and that employes may with renewed interest, find a zest in entering into the effort of trying to excel in that noble spirit of who can best work and who can best serve.

Safety, ranks with production in Carnegie Steel Company plants, and a highly efficient organization is maintained for the study of the subject. This



VIEW OF SAFETY TROPHY

organization through general and sub committees reaches out into every department of eleven manufacturing plants, an extensive railroad system, and a great tonnage carrying river transportation system. Every employe, is made to feel that he is a vital part in a campaign that interests him, and soon he is imparting that spirit to his neighbor.

The work has just begun when all hazardous machinery has been guarded. Safety work is never finished. With the human element, the greatest results of safety work are met. It is the educational side of safety work that interests and holds men, and it is the educational feature that makes a safe workman; the best safety device in all industry.

And it is the educational phase that inspired the trophy idea, in 1920 when it was realized that men strive when there is something at stake. The spirit of sportsmanship is inherent in every man. Therefore, why not make safety work a game? Put it on a competitive basis.

Immediately the spirit of competition manifested itself in the attitude of the men in the plants, and in the reduction in accidents as disclosed in safety reports and records. It readily was demonstrated that the idea of competition was a success, and with each year it grew more keen.

The basis of award was a problem to be mastered. Because of the difference in the number of men employed in each plant, and the varied kinds of work, a just and fair basis was reached by having each plant compete against its own record for the preceding five years. This plan has worked out very satisfactorily, and is the basis now maintained. The plant making the greatest percentage of reduction in lost time accidents in a month, holds the trophy for the succeeding month, and the plant making the greatest percentage of reduction over its own record for the preceding five years, at the end of the year is awarded the trophy in perpetuum.

This trophy which is the seventh the Carnegie Steel Company has offered, went into competition on January 1. It is of bronze and silver and is thirty-seven and three-quarters inches high. It was designed and produced by one of the foremost silversmiths of the country. The principal feature of the composition is an actual blast furnace in miniature, accurate in every minute detail. The furnace is of sterling silver, brush finished, and rests on a bronze plinth which is divided into nine sections carrying silver plates which will carry the names of the winning plants. Around the top of the plinth is the company name cast in the bronze and below this, two plates carry the words SAFETY TROPHY. Between these words is the plate that will carry the name of the final winner.

Against the brilliance of the blast furnace rises the bronze figure of Vulcan mythologically accredited with being the God of metals and emblematic of the steel industry. Flanking this mythological figure are two bronze figures, studies of actual types in districts surrounding steel making plants. One portrays Labor in repose and in a reflective mood while the other represents Motherhood holding a child in a protecting attitude.

A reduction of 86% in lost time accidents has been made by the Carnegie Steel Company since it started its safety educational work in 1911.

Is it worth while? The Carnegie Steel Company with its wide experience in safety work declares that it is. Does it pay? It pays a hundred fold. It pays not alone in dollars and cents, but it pays in benefits to humanity. It pays in building citizenship. It pays in making better workmen, for the safety education work makes men think, for themselves, for their families, and for their neighbors. It gives them a broader viewpoint of life. It makes them realize that they are a part of the scheme of Life.

1928 Accident Prevention Contest

Bethlehem announces Gold Awards to further accident prevention

To further the efforts of Bethlehem and its employees to eliminate accidents, a plan has been evolved to stimulate greater interest in this work during the year 1928. The plan, which takes the form of an Accident Prevention Contest among the various subsidiaries of the corporation, includes all Bethlehem employees in the United States and Canada.

The plan provides that the group making the greatest percentage of reduction in time lost due to accidents during each three months' period in the year 1928 will be awarded the grand prize of $1,000 in gold. To the groups making the second and third best showing will be awarded prizes amounting to $500 and $250 respectively.

There are two types of awards—(1) To the groups showing the greatest percentage of reduction in accident severity rate during the three-month period will be awarded a prize of $1,000 in gold. To the groups making the second and third best showing will be awarded $500 and $250 respectively. (2) To the group showing the greatest percentage in reduction in accident severity rate during the full year will be awarded a trophy to be held in its possession permanently.

The cash award under (1) will be disbursed by the winning groups in such a manner as will best recognize individual effort of employees in accident prevention work. This will be determined jointly by the management and representatives of the employees of the winning groups.

HUMAN WASTE—PREVENT IT

By E. G. GRACE*

TO eliminate waste wherever it exists is one of the greatest contributions we can make to our company and to ourselves. This is the challenge which is now facing business all along the line from the production to the consumption of the things we use. Our ability to make substantial savings in time and materials has been tried and proven. We have made great strides in manufacturing economies during the last few years, but there still remains much that can be done especially in further reducing the human and economic waste caused by accidents.

A man who is hurt suffers pain and worry; his family loses a part or all their income. No inducement should be necessary to encourage employes to use the utmost care and vigilance to avoid injury and save lives. But in order to stimulate greater interest in accident prevention and to provide an incentive for it, your company announces a contest providing substantial awards for accident prevention results during 1928.

Accident prevention is a joint responsibility upon employes as well as employers. It requires active co-operation on the part of both and the enthusiastic interest of every officer and employe. Your company is doing all it can to provide safe working conditions, but accident prevention work becomes, after a plant is physicaliy protected, a matter almost entirely of vigilance and carefulness on the part of the individual.

Bethlehem's management and employes have already shown their ability and willingness to accomplish remarkable results in this field, but nevertheless our cost in compensating for accidents and their treatment amounts to more than $1,500,000 a year and the losses to employes and their families are even greater. Here is an absolute waste that benefits no one and which if eliminated will profit everyone.

Your whole-hearted co-operation therefore to further reduce accidents will help us to help you. And in extending you its well-wishes for the new year the management wants you to know also that all the evidence you have given of loyal support in the past is keenly appreciated.

*President Bethlehem Steel Corporation.

Eleven groups covering Bethlehem's various steel plants, mines, quaries and ship yards will complete for the award in the accident prevention contest.

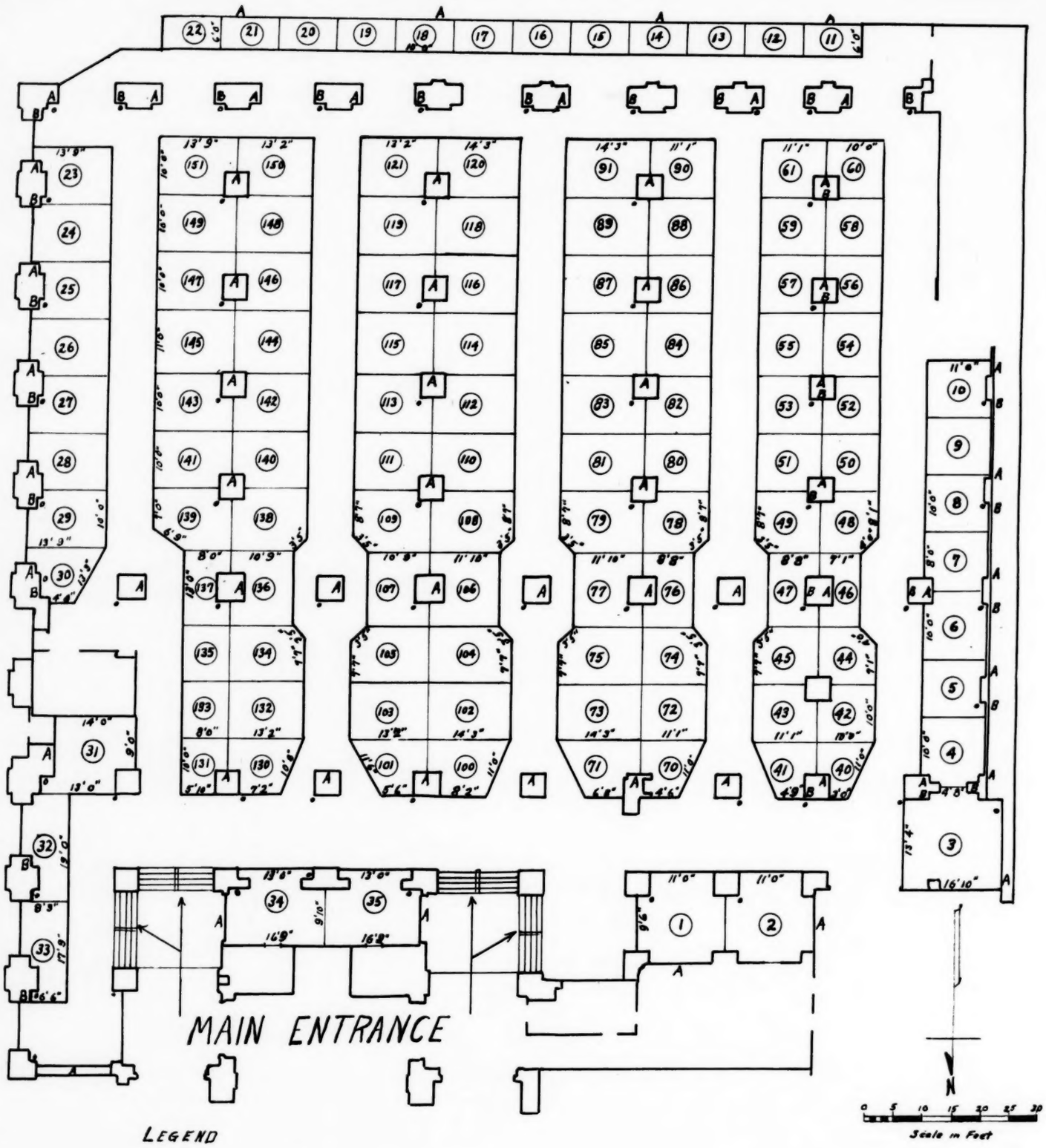
The winners under this contest will be the groups showing the greatest percentage of improvement in their severity rate for the period in question over the lower yearly severity rate for the two pervious years (1926-1927). For example: Assume that the severity rate for a group was 3.50 for 1926 and 3.00 for 1927, the rate for 1927 being the lower yearly record for the 2-year period would be taken as the base for arriving at the percentage of improvement attained. Thus by taking the record yearly severity rate of 3.00 and assuming the rate during a contest period of 3 months is reduced to 1.25, the result would be figured as follows:

Record yearly severity rate to be used	3.00
Severity rate for contest period of three months	1.25
Difference	1.75

$$\% \text{ of improvement } \frac{1.75}{3.00} = 58.33\%$$

The annual award will be determined on a similar basis, taking the percentage reduction for the whole year 1928 instead of for one quarter.

The purpose of basing the awards upon a percentage of improvement rather than upon the actual severity rate is to place more nearly on a comparable basis the varying hazards in the different groups. Using this basis each group will be competing against its own previous record rather than against record of other groups. This basis is fair to all.



LEGEND

A

CABINET CONTAINS
1-60 Amp. 110 V. D.C. Outlet
1-60 " 220 " " "
1-Bell Telephone "
1-Compressed Air "

• Floor Drain

B

CABINET CONTAINS
3/4" High Pressure Steam
1/2" Steam Drip
3/4" Hot Water Outlet
3/4" Cold " "
1/2" Gas "

EXHIBITION HALL STEVENS HOTEL
CHICAGO, ILL.
IRON + STEEL EXPOSITION
JUNE 25th to 28th, 1928.